

**ENVIRONMENTAL ASSESSMENT – PHASE I**

**HERITAGE VILLAGE  
SOUTHWEST CORNER OF HIGHWAY 95 AND 100<sup>th</sup> AVENUE  
PRINCETON, MINNESOTA  
DELTA PROJECT NO. A004-111**

**Prepared for:**

**Heritage Village, LLC  
c/o Solid Ground Development  
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Suite 206  
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(651) 407-6018**

**Prepared by:**

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**July 26, 2004**

**TABLE OF CONTENTS (CONT.)**

**List of Appendices**

Appendix A	<i>Environmental Data Resources, Inc. Radius Map with GeoCheck®</i>
Appendix B	<i>Subsurface Geotechnical Assessment, Exploratory Soils Investigation, Development Engineering, Pennsylvania, 2003</i>
Appendix C	City Directories
Appendix D	Sanborn Fire Insurance Maps – No Coverage Report
Appendix E	Historical Maps
Appendix F	Aerial Photographs
Appendix G	Well Information
Appendix H	Subject Property Photographs
Appendix I	Project Team Profiles

### **1.2 User Reliance**

This report is for the use and benefit of, and may be relied upon by, Heritage Village, LLC and Solid Ground Development.

## **2.0 SITE DESCRIPTION**

<b>SUBJECT PROPERTY DESCRIPTION</b>	
<i>Subject Property Name</i>	Heritage Village
<i>Subject Property Owner</i>	Mr. John Miller
<i>Subject Property Occupant</i>	Mr. John Miller is renting out the property at 1687 100 <sup>th</sup> Avenue to a tenant whose identity was not disclosed.
<i>Subject Property Address</i>	Highway 95 and 100 <sup>th</sup> Avenue, Princeton, Minnesota 55371
<i>Subject Property Location</i>	The center of the parcel is located at Universal Transverse Mercator Zone 15 451838.6 E 504826.0 N. The latitude and longitude coordinates for the subject property are 45°34'12.4" north and 93°37'1.9" west, respectively.
<i>Subject Property Operations</i>	The majority of the subject property is in agricultural production, wooded, or wetland. A homestead exists on a small portion of the property, located at 1687 100 <sup>th</sup> Avenue.
<i>Property Size</i>	The subject property is 197.18 acres, which is composed of two parcels. On the north of 17 <sup>th</sup> Street is 118 acres; another 80 acres lie south of 17 <sup>th</sup> Street.
<i>Land Area Description</i>	The subject property is located in an agricultural area west of Princeton. The land area is roughly half in agricultural use, and half wooded or wetland. On the far east side of the subject property is a small residence and outbuildings. A road (17 <sup>th</sup> Street) divides the northern and southern parcels.
<i>Description of Structures</i>	There are only four buildings on the property, consisting of a house and three outbuildings (a barn, shed, and garage).
<i>Zoning</i>	Currently is zoned Agricultural, but the zoning is being changed to Residential.
<i>Site Topographic Relief</i>	Generally flat, with a slight slope to the west and south.

A subject property location map is included as Figure 1. A subject property layout map is included as Figure 2.

## **3.0 USER-PROVIDED INFORMATION**

The "User" as defined in this assessment is Heritage Village LLC and Solid Ground Development.

PHYSICAL SETTING INFORMATION FOR SITE AND SURROUNDING AREA		SOURCE
Topography		
Site Elevation	Approximately 987 feet above sea level.	Princeton, Minnesota, 7.5-Minute Series Topographic Map, United States Geological Survey (USGS), 1968 (photorevised 1982).
Surface Runoff/ Topographic Gradient	Terrain is primarily flat, with slight grade to the south and west.	
Closest Surface Water	West Branch of the Rum River, approximately 2,800 feet to the northeast.	
FEMA Map		
Zone	The subject property is located outside of the 500-year flood zone, but does include areas considered federal wetlands.	Environmental Data Resources, Inc. (EDR) Radius Map with GeoCheck®
Soil Characteristics		
Soil Type	The surficial sediments in the vicinity of the subject property consist of fine sand of the Zimmerman Series.	EDR, Radius Map with GeoCheck
Description	These soils exhibit high infiltration rates. Soils are deep, well drained to excessively drained sands and gravels. The soils have very high and high hydraulic conductivity and low water holding capacity. Depth to the water table is more than 6 feet.	
Geology/Hydrogeology		
Formation	Glacial outwash deposits were encountered in each of the 15 borings completed as part of a site geotechnical survey in 2003.	Subsurface Geotechnical Assessment, Exploratory Soils Investigation, Development Engineering, Pennsylvania, 2003.
Description	The glacial deposits consist of approximately 1 foot of black organic sand underlain by poorly graded brown sand.	
Geology/Hydrogeology		
Estimated Depth to First Occurrence of Ground Water	Saturated conditions were observed in the geotechnical borings at depths ranging from 3 to 6 feet below surface grade during the 2003 assessment.	Subsurface Geotechnical Assessment, Exploratory Soils Investigation, Development Engineering, Pennsylvania, 2003.
Hydrogeologic Gradient	The general direction of ground water flow in the area is assumed to be easterly, toward the West Branch of the Rum River.	

Based on a compilation of the historical sources, the following is a summary of historical land uses on adjoining properties:

DIRECTION	HISTORICAL USE OF ADJOINING PROPERTIES
North	Agricultural and residential development began prior to the 1930s, though records before that time were not available for this review. By 1939, all land in the area was used in crop farming. Between 1939 and the present, there has been gradual addition of new houses, but agriculture has always dominated the land use.
South	Agricultural and residential development began prior to the 1930s, though records before that time were not available for this review. By 1939, all land in the area was used in crop farming. Between 1939 and the present, there has been gradual addition of new houses, but agriculture has always dominated the land use.
East	Agricultural and residential development began prior to the 1930s, though records before that time were not available for this review. By 1939, all land in the area was used in crop farming. Between 1939 and the present, there has been gradual addition of new houses, but agriculture has always dominated the land use.
West	Agricultural and residential development began prior to the 1930s, though records before that time were not available for this review. By 1939, all land in the area was used in crop farming. Between 1939 and the present, there has been gradual addition of new houses, but agriculture has always dominated the land use.

A brief discussion of the findings from each of the historical sources is presented in Sections 4.2.3 through 4.2.7.

#### 4.2.3 City Directories

City directories compiled by Polk City Directory were obtained for the subject property for the years 1990-91, 1995-96, and 1998-99. Directories were reviewed for 17<sup>th</sup> Street, 100<sup>th</sup> Avenue, Highway 95, and County Road 31. In this case, the site is defined as 1687 100<sup>th</sup> Avenue. The following is a summary of listings from the city directory review:

YEAR	SUMMARY OF CITY DIRECTORY LISTINGS
1990-91	Subject Property: Address not included in directory listing
	Surrounding Area: Residential listings, church
1995-96	Subject Property: John Edmonds
	Surrounding Area: Residential listings, multiple churches, driving school, masonry construction, building and restoration company, restaurant, corner store, bowling alley

#### **4.2.6 Aerial Photographs**

Aerial photographs of the site were obtained for the years 1939, 1953, 1965, 1974, 1983, 1991, and 2003. The site is defined as 1687 100<sup>th</sup> Avenue. Copies of these photographs are presented in Appendix F. The following is a summary of the aerial photographs review:

YEAR	SCALE	SUMMARY OF AERIAL PHOTOGRAPHS
1939	1:6,000	<b>Subject Property:</b> Developed with a house and outbuildings. Remaining land is in crop productions, with the exception of the wooded and wetland areas.
		<b>Surrounding Area:</b> Agricultural crop production, with a couple of homesteads.
1953	1:9,600	<b>Subject Property:</b> Developed with a house and outbuildings. Remaining land is in crop productions, with the exception of the wooded and wetland areas.
		<b>Surrounding Area:</b> Agricultural crop production. There are more homesteads and road development than in 1939.
1965, 1974, 1983, and 1991	1:6,000	<b>Subject Property:</b> Developed with a house and outbuildings. Remaining land is in crop productions, with the exception of the wooded and wetland areas.
		<b>Surrounding Area:</b> Agricultural crop production. There are more homesteads than in the 1953 photograph, but similar road development.
2003	1:6,000	<b>Subject Property:</b> Developed with a house and outbuildings. Remaining land is in crop productions, with the exception of the wooded and wetland areas.
		<b>Surrounding Area:</b> Agricultural crop production. There are more homesteads than in the 1991 photograph, but similar road development.

#### **4.2.7 Property Records Review**

##### **Tax Assessor Files**

A review of available tax assessment files for the subject property was performed by HIG. No documents were provided regarding this property.

##### **Building Permits**

A review of available building permit files for the subject property was performed by HIG. No documents were provided regarding this property.

##### **Fire Department Files**

Fire department records on file for public and private gas stations, L.P. installations, bulk plants, dry cleaning plants, closed gasoline stations, miscellaneous facilities, tank installations, and fire safety inspections were reviewed. No records were found regarding this property.

SUMMARY OF FEDERAL AND STATE AGENCY DATABASE FINDINGS			
REGULATORY DATABASE	MINIMUM SEARCH DISTANCE	SUBJECT PROPERTY LISTED	TOTAL FACILITIES LISTED
Emergency Response Notification System (ERNS)	Property	No	0
Superfund Consent Decrees (CONSENT)	1 mile	No	0
Record of Decision (ROD)	1 mile	No	0
Delisted NPL Sites (DELISTED NPL)	1 mile	No	0
Facility Index System (FINDS)	Property	No	0
Hazardous Materials Information Reporting System (HMIRS)	Property	No	0
Material Licensing Tracking System (MLTS)	Property	No	0
Mines Master Index File (MINES)	¼ mile	No	0
Federal Superfund Liens (NPL Liens)	Property	No	0
PCB Activity Database System (PADS)	Property	No	0
US Brownfields (US BROWNFIELDS)	¼ mile	No	0
Department of Defense Sites (DOD)	1 mile	No	0
RCRA Administrative Action Tracking System (RAATS)	Property	No	0
Toxic Release Information System (TRIS)	Property	No	0
Toxic Substances Control Act (TSCA)	Property	No	0
Federal Insecticide, Fungicide, Rodenticide Act: Section 7 Tracking System (SSTS)	Property	No	0
Federal Insecticide, Fungicide, Rodenticide Act/TSCA Tracking System (FTTS)	Property	No	0
<b>State</b>			
State Hazardous Waste Sites/Superfund Permanent List of Priorities (SHWS – State Haz. Waste)	1 mile	No	0
Voluntary Investigation and Cleanup Program List (MN VIC)	¼ mile	No	0
State Landfill Sites/Permitted Solid Waste Disposal Facilities (SWF/LF)	¼ mile	No	0
Leaking Underground Storage Tank Sites (LUST)	¼ mile	No	0
Registered Underground Storage Tank Sites (UST)	¼ mile	No	0
Underground Storage Tank Sites on Indian Land (INDIAN UST)	Property	No	0
Registered Aboveground Storage Tank Sites (AST)	Property	No	0
Minnesota Spills Database (MN Spills)	Property	No	0
Active TSD Facilities (MN HWS Permit)	1 mile	No	0
Permanent List of Priority Deletions (MN Deleted SHWS)	1 mile	No	0
Closed Landfills Priority List (MN LCP)	¼ mile	No	0
List of Sites in MPCA Database (MN LS)	¼ mile	No	0

location map is included as Figure 1. A subject property layout map is included as Figure 2. Representative site photographs are presented in Appendix H.

## 5.2 General Subject Property Setting

SUBJECT PROPERTY RECONNAISSANCE	
<i>Field Personnel</i>	Ms. Princesa VanBuren
<i>Reconnaissance Date &amp; Time</i>	February 26, 2004, 1:00 p.m.
<i>Weather</i>	Approximately 40°F, partly cloudy, breeze at 0-5 mph
<i>Escort</i>	Mr. Eric Miller
Subject Property Description	
<i>Subject Property Name</i>	Heritage Village
<i>Subject Property Owner</i>	Mr. John Miller
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<i>Property Size</i>	The subject property is 197.18 acres, which is composed of two parcels. On the north of 17 <sup>th</sup> Street is 118 acres; another 80 acres lie south of 17 <sup>th</sup> Street.
<i>Land Area Description</i>	The subject property is located in an agricultural area west of Princeton. The land area is roughly half in agricultural use, and half wooded or wetland. On the far east side of the subject property is a small residence and outbuildings. A road (17 <sup>th</sup> Street) divides the northern and southern parcels.
<i>Description of Structures</i>	There are four buildings on the property, consisting of a house and three outbuildings (a barn, shed, and garage).
<i>Zoning</i>	Currently is zoned Agricultural, but the zoning is being changed to Residential.
<i>Site Topographic Relief</i>	Generally flat, with a slight slope to the west and south.



CATEGORY	ITEM OR FEATURE	ITEM OR FEATURE OBSERVED?	LOCATION
<i>Evidence of Releases or Potential Releases</i>	Stressed vegetation	No	--
	Stained soil	No	--
	Stained pavement or similar surface	No	--
	Leachate and/or waste seeps	No	--
	Trash, debris, and/or other waste materials	No	--
	Dumping or disposal areas	No	--
	Construction/demolition debris and/or dumped fill dirt	No	--
	Surface water discoloration, odor, sheen, and/or free floating product	No	--
	Strong, pungent, or noxious odors	No	--
<i>Other Notable Subject Property Features</i>	Surface water control structure	No	--
	Quarries or pits	No	--
	Wells	No	--
	Floor drains	No	--

The subject property was included in the survey, as well as the barn and garage at 1687 100<sup>th</sup> Avenue. The house was not included in the survey. The storage building is being rented, and access was not possible as the site owner does not have a key for the storage building.

Information concerning the above categories that are marked "yes" is presented below:

- Small quantity containers of gasoline, oil, and household-type cleaners were stored inside the barn and garage.
- A rented propane tank is situated just next to the house (see subject property photographs presented in Appendix H).
- Two large metal drums were located outside of the barn, next to the silo. Based on moving the drums, they appear to be empty (see subject property photographs presented in Appendix H).

#### **5.4 Subject Property Discussion**

The subject property is located in an agricultural area west of Princeton. It totals 197.18 acres between two parcels: 118 acres on the north side of 17<sup>th</sup> Street and approximately 80 acres south of 17<sup>th</sup> Street. The land area is roughly half in agricultural use, and half wooded or wetland. There are only four buildings on the property, consisting of a house and three outbuildings (a barn, shed, and garage). Mr. John Miller is renting out the property at 1687 100<sup>th</sup> Avenue to an undisclosed tenant. The property was covered in

assessment has identified no historical recognized environmental conditions in connection with the subject property.

### **7.3 De Minimis Conditions**

The ASTM E 1527-00 standard defines the term *de minimis conditions* as conditions that "generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies". The following de minimis conditions were identified in connection with the subject property.

- Due to the age of the building that had been on site (built prior to 1958), there is the potential that hazardous materials may have been encountered or released during demolition.
- A septic system exists adjacent to the home at 1687 100<sup>th</sup> Avenue. It consists of an underground tank and drainfield. The age of the system is unknown. The presence of the septic system is considered to be a de minimis condition.
- Small quantities of oil, gas, and household cleaners were seen in the barn and garage.
- Two apparently empty barrels were found next to the barn. What was, or may still be, stored in them is known.

## **8.0 CONCLUSION(S) AND RECOMMENDATIONS**

Delta has performed a Phase I EA in general conformance with the scope and limitations of ASTM Practice E 1527-00 of the property located at the southwest corner of Highway 95 and 100<sup>th</sup> Avenue in Princeton, Minnesota. Any exceptions to or deletions from this practice are described in the body of this report. This assessment has revealed no recognized environmental conditions in connection with the subject property.

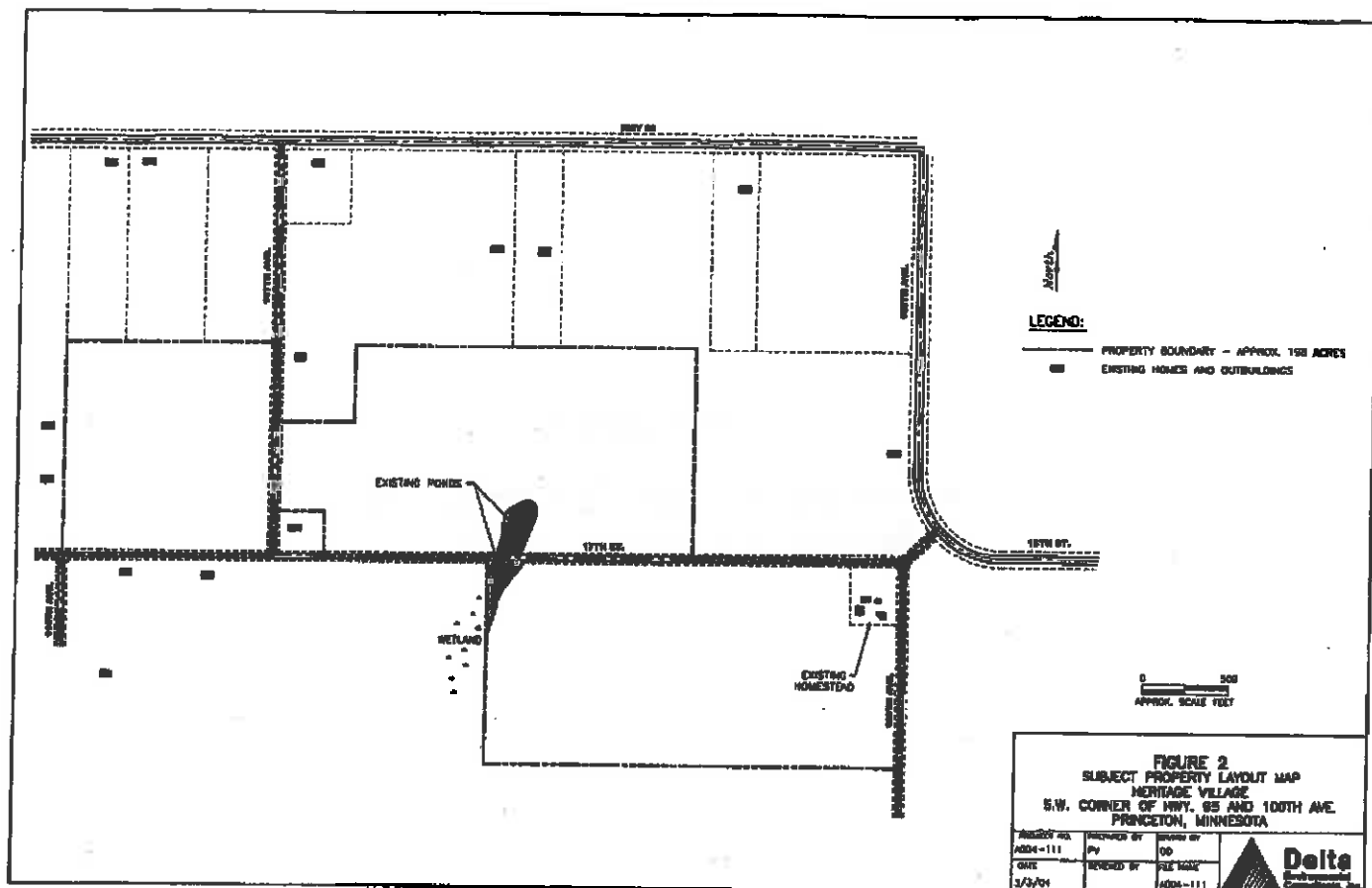
## **9.0 LIMITATIONS OF ENVIRONMENTAL ASSESSMENTS**

The recommendations contained in this report represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Delta's client and anyone else specifically identified in writing by Delta as a user of this report. Delta will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this report.

### **9.1 Subject Property Data Review**

Delta obtained, reviewed, and evaluated information available from the User(s) property owner, designated representative(s), site contact, and local, state, or federal public entities to the extent

## FIGURES





## **The EDR Radius Map with GeoCheck®**

**Heritage Village  
Highway 95 and 100th Avenue  
Princeton, MN 55371**

**Inquiry Number: 01131386.1r**

**February 18, 2004**

## **The Standard In Environmental Risk Management Information**

**440 Wheelers Farms Road  
Milford, Connecticut 06460**

### **Nationwide Customer Service**

**Telephone: 1-800-352-0050  
Fax: 1-800-231-6802  
Internet: [www.edrnet.com](http://www.edrnet.com)**

Due to poor or inadequate address information, the following sites were not mapped:

<u>Site Name</u>	<u>Database(s)</u>
WESTLING MANUFACTURING COMPANY	SHWS
GOOD ROADS EQUIPMENT CO	FINDS, RCRIS-LQG, MN
	Enforcement, CERC-NFRAP
GLENDORADO GARAGE	LUST
CONOCO	UST
O G HANSON & SON INC	UST
MINKS DAN	UST, AST
DARAN INC	UST
ROBERT TOBERMAN PROPERTY	UST
JOHNS INDEPENDENT OIL CO	UST
MARIGOLD/KEMPS	UST
KLARS COUNTRY MACHINING	RCRIS-SQG, FINDS
SMITH AL	RCRIS-SQG, FINDS
J K AUTO ELECTRIC	RCRIS-SQG, FINDS
ALLSTATE LEASING	RCRIS-SQG, FINDS
HEDSTROM TRUCK REPAIR	RCRIS-SQG, FINDS
HANSON OG AND SONS	RCRIS-SQG, FINDS
WESTGATE AUTOMOTIVE INC	RCRIS-SQG, FINDS
VIKING PARTS AND REPAIR	RCRIS-SQG, FINDS
STEVENS AARON	RCRIS-SQG, FINDS
KUETHER DON REPAIR	RCRIS-SQG, FINDS
EVENSON AUTOBODY	RCRIS-SQG, FINDS
KRUSE AVIATION	RCRIS-SQG, FINDS
J K AUTO ELECTRIC	RCRIS-SQG, FINDS
CENTRAL FLEET SERVICE	RCRIS-SQG, FINDS
ALLSTATE LEASING	RCRIS-SQG, FINDS
PLASTIC PRODUCTS CO INC	RCRIS-SQG, FINDS
AJM PAINTING INC	RCRIS-SQG, FINDS
WESTLING MANUFACTURING COMPANY	RCRIS-SQG, FINDS
	MN Deleted SHWS

# APPENDIX C

<u>Database</u>	<u>Target Property</u>	<u>Search Distance (Miles)</u>	<u>&lt; 1/8</u>	<u>1/8 - 1/4</u>	<u>1/4 - 1/2</u>	<u>1/2 - 1</u>	<u>&gt; 1</u>	<u>Total Plotted</u>
CDL	TP		NR	NR	NR	NR	NR	0
MN Enforcement	TP		NR	NR	NR	NR	NR	0
BULK	TP		NR	NR	NR	NR	NR	0
MN AGSPILLS	TP		NR	NR	NR	NR	NR	0
<b><u>EDR PROPRIETARY HISTORICAL DATABASES</u></b>								
Coal Gas		1.000	0	0	0	0	NR	0
<b><u>BROWNFIELDS DATABASES</u></b>								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
MN VIC		0.500	0	0	0	NR	NR	0
INST CONTROL		0.250	0	0	NR	NR	NR	0

**NOTES:**

AQUIFLOW - see EDR Physical Setting Source Addendum

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Date of Government Version: 11/17/03  
 Date Made Active at EDR: 02/02/04  
 Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 12/22/03  
 Elapsed ASTM days: 42  
 Date of Last EDR Contact: 12/22/03

**CORRACTS: Corrective Action Report**

Source: EPA  
 Telephone: 800-424-9346

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/18/03  
 Date Made Active at EDR: 02/02/04  
 Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 12/26/03  
 Elapsed ASTM days: 38  
 Date of Last EDR Contact: 12/08/03

**RCRIS: Resource Conservation and Recovery Information System**

Source: EPA  
 Telephone: 800-424-9346

Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 01/12/04  
 Date Made Active at EDR: 02/10/04  
 Database Release Frequency: Varies

Date of Data Arrival at EDR: 01/19/04  
 Elapsed ASTM days: 22  
 Date of Last EDR Contact: 01/19/04

**ERNS: Emergency Response Notification System**

Source: National Response Center, United States Coast Guard  
 Telephone: 202-260-2342

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/02  
 Date Made Active at EDR: 02/03/03  
 Database Release Frequency: Annually

Date of Data Arrival at EDR: 01/27/03  
 Elapsed ASTM days: 7  
 Date of Last EDR Contact: 01/26/04

**FEDERAL ASTM SUPPLEMENTAL RECORDS**

**BRS: Biennial Reporting System**

Source: EPA/NTIS  
 Telephone: 800-424-9346

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/01/01  
 Database Release Frequency: Biennially

Date of Last EDR Contact: 12/18/03  
 Date of Next Scheduled EDR Contact: 03/15/04

**CONSENT: Superfund (CERCLA) Consent Decrees**

Source: EPA Regional Offices  
 Telephone: Varies

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A  
 Database Release Frequency: Varies

Date of Last EDR Contact: N/A  
 Date of Next Scheduled EDR Contact: N/A



Date of Government Version: 10/16/03  
Database Release Frequency: Quarterly

Date of Last EDR Contact: 12/22/03  
Date of Next Scheduled EDR Contact: 03/22/04

**STATE OF MINNESOTA ASTM STANDARD RECORDS**

**SHWS: Superfund Permanent List of Priorities**

Source: Minnesota Pollution Control Agency  
Telephone: 651-296-6139

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 06/30/03  
Date Made Active at EDR: 08/22/03  
Database Release Frequency: Annually

Date of Data Arrival at EDR: 07/31/03  
Elapsed ASTM days: 22  
Date of Last EDR Contact: 12/10/03

**VIC: Voluntary Investigation and Cleanup Program**

Source: Minnesota Pollution Control Agency  
Telephone: 651-296-7291

Voluntary Investigation and Cleanup (VIC) Program List.

Date of Government Version: 01/06/04  
Date Made Active at EDR: 02/03/04  
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 01/06/04  
Elapsed ASTM days: 28  
Date of Last EDR Contact: 01/06/04

**SWF/LF: Permitted Solid Waste Disposal Facilities**

Source: Minnesota Pollution Control Agency  
Telephone: 651-296-7276

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 12/16/03  
Date Made Active at EDR: 02/03/04  
Database Release Frequency: Varies

Date of Data Arrival at EDR: 12/17/03  
Elapsed ASTM days: 48  
Date of Last EDR Contact: 12/12/03

**LUST: Leak Sites**

Source: Minnesota Pollution Control Agency  
Telephone: 651-649-5451

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 11/17/03  
Date Made Active at EDR: 12/05/03  
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 11/18/03  
Elapsed ASTM days: 17  
Date of Last EDR Contact: 11/17/03

**UST: Underground Storage Tank Database**

Source: Minnesota Pollution Control Agency  
Telephone: 651-649-5451

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 09/11/03  
Date Made Active at EDR: 11/26/03  
Database Release Frequency: Varies

Date of Data Arrival at EDR: 11/03/03  
Elapsed ASTM days: 23  
Date of Last EDR Contact: 11/03/03

**Medical Centers: Provider of Services Listing**

Source: Centers for Medicare &amp; Medicaid Services

Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare &amp; Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

**Nursing Homes**

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

**Public Schools**

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

**Private Schools**

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

**Daycare Centers: Child Care Centers**

Source: Department of Human Services

Telephone: 651-298-3871

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

**STREET AND ADDRESS INFORMATION**

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## GROUNDWATER FLOW VELOCITY INFORMATION

### GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

### GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

#### **ROCK STRATIGRAPHIC UNIT**

Era: Precambrian  
System: Precambrian  
Series: Z Sedimentary rocks  
Code: Z (decoded above as Era, System & Series)

#### **GEOLOGIC AGE IDENTIFICATION**

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

### DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name: ZIMMERMAN

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Excessively. Soils have very high and high hydraulic conductivity and low water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: LOW

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

# GEOPHYSICAL SURVEILLANCE SOURCE INFORMATION

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

1  
NE  
1/4 - 1/2 Mile  
Higher

MN WELLS 304556697

## Principal Well Information:

Unique Well #:	566697	County:	MILLE LACS
Township:	36	Section:	29
Range:	26	Elevation (In Ft.):	Not Reported
Subsection:	CCC	Locator:	Not Reported
Location Method	Not Reported	Depth Completed (In Ft.):	91
7.5 Minute Quadrangle:	Not Reported	Date drilled:	08/31/1995
Depth Drilled (In Ft.):	91	Date of Last Update:	12/27/1995
Status:	Active	Not Reported	
Geographic Coordinates Method:		Owner's Name:	Not Reported
Well Name:	TRUNK, EDWARD	Local Identifier Type:	Not Reported
Local Identifier:	Not Reported	86270	
Data Source/Driller's License #:		Depth Cased (In Ft.):	86
Casing Diam (In):	4	Permit Type:	Not Reported
Permit #:	Not Reported	Wellhead Protection Area:	Not Reported
First Bedrock:	Not Reported	Open Interval-Bottom Unit:	Not Reported
Open Interval-Top:	Not Reported	Well Grouted ?:	Yes
DNR Application #:	Not Reported	Date Well Abandoned:	Not Reported
Well Sealed ?:	Not Reported		
Aquifer:	Not Reported		
Depth to Bedrock (Ft.):	Not Reported		
Any other Unused, Abandoned Well on Property ?:		No	
Potential Pollution Source Type:		Septic Tank/Drain Field	
Potential Pollution Source Distance (In Ft.):		51	
Potential Pollution Source Direction:		N	
Use:	Domestic		
Elevation Method:	Not Reported		
Data for this well are contained in the DNT Observation Well Network Data base:		Not Reported	
Indicator that an entry for this well exists in the State Water Use Data System:		Not Reported	
Data exist for this well in the PCA Integrated Ground-Water Information System:		Not Reported	
Indicator of the availability of cuttings, core or downhole geophysical data for this well:		Not Reported	
Indicator of the existence of a digitized UTM location for this well:		Not Reported	

## Well Address Information:

Well Address: 2012 100TH AV  
PRINCETON, MN 55371

## Coliform/Nitrate/Static Water Level Information:

Coliform Bacteria Count:	Not Reported	Detection Limit Flag:	Not Reported
Coliform Sampling Date:	Not Reported	Coliform Analysis Source:	Not Reported
Colif. Analys. Reliability:	Not Reported	Bacteria Analysis Technique:	Not Reported
Nitrate Count (mg/l):	Not Reported	Nitrate Detection Limit Flag:	Not Reported
Nitrate Sampling Date:	Not Reported	Nitrate Analysis Source:	Not Reported
Nit. Analys. Reliability:	Not Reported	Nit. Analysis Technique:	Not Reported
Static Water Lev. (In Ft.):	15	Date Static Level measured:	08/31/1995
Static Water Level Data Source/Driller's License #:		86270	

# REPORT OF DATA FOR OBSERVATION WELL

Use: Domestic  
 Elevation Method: 7.5-minute Topographic Map (+ or - 5 Feet)  
 Data for this well are contained in the DNT Observation Well Network Data base: Not Reported  
 Indicator that an entry for this well exists in the State Water Use Data System: Not Reported  
 Data exist for this well in the PCA Integrated Ground-Water Information System: Not Reported  
 Indicator of the availability of cuttings, core or downhole geophysical data for this well: Not Reported  
 Indicator of the existence of a digitized UTM location for this well: Not Reported

## Well Address Information:

Well Address: RR 1  
 PRINCETON, MN

## Coliform/Nitrate/Static Water Level Information:

Coliform Bacteria Count:	Not Reported	Detection Limit Flag:	Not Reported
Coliform Sampling Date:	Not Reported	Coliform Analysis Source:	Not Reported
Colif. Analys. Reliability:	Not Reported	Bacteria Analysis Technique:	Not Reported
Nitrate Count (mg/l):	Not Reported	Nitrate Detection Limit Flag:	Not Reported
Nitrate Sampling Date:	Not Reported	Nitrate Analysis Source:	Not Reported
Nit. Analys. Reliability:	Not Reported	Nit. Analysis Technique:	Not Reported
Static Water Lev. (in Ft.):	17	Date Static Level measured:	07/06/1978
Static Water Level Data Source/Driller's License #:			88270

## Geologic Information:

Geologic Interp. Method: Interpreted in Context of Geologic Study between 1:24,000 and 1:100,000  
 Geologic Interpretation Source: Minn. Geological Survey  
 Geologist Responsible: EB Date of Last Update: 07/14/1994

## Drilling/Casing Information:

Drilling Method:	Non-specified Rotary	Drilling Fluid:	Not Reported
Casing Material:	Steel (Black or Low Carbon)	Casing Jointing:	Threaded
Casing Top to Ground Surface Distance:			1
Any Drive Shoe:	No	Casing Installation:	Single Casing
Diameter of the largest Casing Set (in inches):			4
Depth to the Top of the largest Casing Set (Ft.):			0
Depth to the Bottom of the largest Casing Set (Ft.):			70
Diameter of the 2nd largest Casing Set (in.):		Not Reported	
Depth to the Top of the 2nd largest Casing Set (Ft.):		Not Reported	
Depth to Bottom of the 2nd largest Casing Set (Ft.):		Not Reported	
Diameter of the 3rd largest Casing Set (in.):		Not Reported	
Depth to Top of the 3rd largest Casing Set (Ft.):		Not Reported	
Depth to Bottom of the 3rd largest Casing Set (Ft.):		Not Reported	
Diameter of the Top Section of the Hole (in.):		Not Reported	
Depth to the Bottom of the widest Section of the Hole (Ft.):		Not Reported	
Diameter of the 2nd largest Section of the Hole (in.):		Not Reported	
Depth to Bottom of the 2nd largest Section of the Hole (Ft.):		Not Reported	
Diameter of the 3rd largest Section of the Hole (in.):		Not Reported	
Depth to Bottom of the 3rd largest Section of the Hole (Ft.):		Not Reported	

## Screen Information:

Depth to Top of uncased Interval in Ft. (if not screened):	Not Reported
Depth to Bottom of uncased Interval in Ft. (if not screened):	Not Reported
Any Screen present:	Yes
Screen Make:	JOHNSON
Screen Type:	Stainless Steel
1st Screen Slot/Gauze:	15
Screen Diameter (in inches):	3
1st Screen Depth to Top:	70
1st Screen length:	4.92
2nd Scr. Slot/Gauze:	Not Reported
1st Screen Depth to Bottom:	75
2nd Scr. length:	Not Reported
2nd Scr. Depth to Top:	Not Reported
2nd Scr. Depth to Bottom:	Not Reported

# GEOTECHNICAL PHYSICAL SETTING SOURCE MAP FINDINGS

## Drilling/Casing Information:

Drilling Method:	Non-specified Rotary	Drilling Fluid:	Bentonite
Casing Material:	Steel (Black or Low Carbon)	Casing Jointing:	Threaded
Casing Top to Ground Surface Distance:			1.0
Any Drive Shoe:	No	Casing Installation:	Single Casing
Diameter of the largest Casing Set (Inches):			4
Depth to the Top of the largest Casing Set (Ft.):			0
Depth to the Bottom of the largest Casing Set (Ft.):			102
Diameter of the 2nd largest Casing Set (In.):			Not Reported
Depth to the Top of the 2nd largest Casing Set (Ft.):			Not Reported
Depth to Bottom of the 2nd largest Casing Set (Ft.):			Not Reported
Diameter of the 3rd largest Casing Set (In.):			Not Reported
Depth to Top of the 3rd largest Casing Set (Ft.):			Not Reported
Depth to Bottom of the 3rd largest Casing Set (Ft.):			Not Reported
Diameter of the Top Section of the Hole (In.):			6
Depth to the Bottom of the widest Section of the Hole (Ft.):	107		
Diameter of the 2nd largest Section of the Hole (In.):			Not Reported
Depth to Bottom of the 2nd largest Section of the Hole (Ft.):			Not Reported
Diameter of the 3rd largest Section of the Hole (In.):			Not Reported
Depth to Bottom of the 3rd largest Section of the Hole (Ft.):			Not Reported

## Screen Information:

Depth to Top of uncased Interval in Ft. (if not screened):	Not Reported		
Depth to Bottom of uncased Interval in Ft. (if not screened):	Not Reported		
Any Screen present:	Yes	Screen Type:	Stainless Steel
Screen Make:	JOHNSON	Screen Diameter (Inches):	2
1st Screen Slot/Gauze:	15	1st Screen length:	5
1st Screen Depth to Top:	102	1st Screen Depth to Bottom:	107
2nd Scm. Slot/Gauze:	Not Reported	2nd Scm. length:	Not Reported
2nd Scm. Depth to Top:	Not Reported	2nd Scm. Depth to Bottom:	Not Reported

## Pumpage Test/Driller Information:

Static Water Lev. (In Ft.):	16	Date Tested:	10/28/1991
1st Test Time (Hrs):	2	1st Test Pumpage (Gal/min):	20
2nd Test Time (Hrs):	Not Reported	2nd Test Pumpage (Gal/min):	Not Reported
3rd Test Time (Hrs):	Not Reported	3rd Test Pumpage (Gal/min):	Not Reported
Driller's Name:	Not Reported		
Water Level after 1st Pumping Test (In Ft.):			Not Reported
Water Level after 2nd Pumping Test (In Ft.):			Not Reported
Water Level after 3rd Pumping Test (In Ft.):			Not Reported

## Well Completion/Grout information:

Pitless Adaptor Make:	MONITOR SNAP	Pitless Adaptor Model:	PY
Any Basement Offset:	No	Is Casing 1 Ft. Above Ground:	Yes
Grout 1 Material:	Cuttings	Grout 1 Material:	Not Reported
Grout 1 Top Depth:	Not Reported	Grout 1 Bottom Depth:	Not Reported
Grout 2 Material:	Not Reported	Grout 2 Material:	Not Reported
Grout 2 Top Depth:	Not Reported	Grout 2 Bottom Depth:	Not Reported
Grout 3 Material:	Not Reported	Grout 3 Material:	Not Reported
Grout 3 Top Depth:	Not Reported	Grout 3 Bottom Depth:	Not Reported
Any Plastic Casing Protection:			No

# GEOLOGICAL PHYSICAL SETTING SOURCE APPENDIX

## Owner/Contact Address Information:

Owner's Address: 10703 95 SH  
PRINCETON, MN 55371

## Coliform/Nitrate/Static Water Level Information:

Coliform Bacteria Count:	Not Reported	Detection Limit Flag:	Not Reported
Coliform Sampling Date:	Not Reported	Coliform Analysis Source:	Not Reported
Colif. Analys. Reliability:	Not Reported	Bacteria Analysis Technique:	Not Reported
Nitrate Count (mg/l):	Not Reported	Nitrate Detection Limit Flag:	Not Reported
Nitrate Sampling Date:	Not Reported	Nitrate Analysis Source:	Not Reported
Nit. Analys. Reliability:	Not Reported	Nit. Analysis Technique:	Not Reported
Static Water Lev. (in Ft.):	15	Date Static Level measured:	06/13/1994
Static Water Level Data Source/Driller's License #:			02370

C11  
East  
1/2 - 1 Mile  
Lower

MN WELLS 3048470875

## Principal Well Information:

Unique Well #:	470875	County:	MILLE LACS
Township:	36	Section:	32
Range:	28	Elevation (in Ft.):	Not Reported
Subsection:	ACA	Locator:	Not Reported
Location Method:	Not Reported	Depth Completed (in Ft.):	64
7.5 Minute Quadrangle:	Not Reported	Date drilled:	03/14/1991
Depth Drilled (in Ft.):	64	Date of Last Update:	09/22/1993
Status:	Active	Not Reported	
Geographic Coordinates Method:		Owner's Name:	Not Reported
Well Name:	POFFER, BILL	Local Identifier Type:	Not Reported
Local Identifier:	Not Reported		
Data Source/Driller's License #:		30604	
Casing Diam (in):	4	Depth Cased (in Ft.):	59
Permit #:	Not Reported	Permit Type:	Not Reported
First Bedrock:	Not Reported	Wellhead Protection Area:	Not Reported
Open Interval-Top:	Not Reported	Open Interval-Bottom Unit:	Not Reported
DNR Application #:	Not Reported	Well Grouted ?:	Yes
Well Sealed ?:	Not Reported	Date Well Abandoned:	Not Reported
Aquifer:	Not Reported		
Depth to Bedrock (Ft.):	Not Reported		
Any other Unused, Abandoned Well on Property ?:	Yes		
Potential Pollution Source Type:	Other		
Potential Pollution Source Distance (in Ft.):	62		
Potential Pollution Source Direction:	SW		
Use:	Domestic		
Elevation Method:	Not Reported		
Data for this well are contained in the DNT Observation Well Network Data base:		Not Reported	
Indicator that an entry for this well exists in the State Water Use Data System:		Not Reported	
Data exist for this well in the PCA Integrated Ground-Water Information System:		Not Reported	
Indicator of the availability of cuttings, core or downhole geophysical data for this well:		Not Reported	
Indicator of the existence of a digitized UTM location for this well:		Not Reported	

## Well Address Information:

Well Address: RR 4 BOX 13  
PRINCETON, MN 55371

# PHYSICAL MEASUREMENT SOURCE MAP FINDINGS

Use: Domestic  
 Elevation Method: Not Reported  
 Data for this well are contained in the DNT Observation Well Network Data base: Not Reported  
 Indicator that an entry for this well exists in the State Water Use Data System: Not Reported  
 Data exist for this well in the PCA Integrated Ground-Water Information System: Not Reported  
 Indicator of the availability of cuttings, core or downhole geophysical data for this well: Not Reported  
 Indicator of the existence of a digitized UTM location for this well: Not Reported

## Coliform/Nitrate/Static Water Level Information:

Coliform Bacteria Count:	Not Reported	Detection Limit Flag:	Not Reported
Coliform Sampling Date:	Not Reported	Coliform Analysis Source:	Not Reported
Colif. Analys. Reliability:	Not Reported	Bacteria Analysis Technique:	Not Reported
Nitrate Count (mg/l):	Not Reported	Nitrate Detection Limit Flag:	Not Reported
Nitrate Sampling Date:	Not Reported	Nitrate Analysis Source:	Not Reported
Nit. Analys. Reliability:	Not Reported	Nit. Analysis Technique:	Not Reported
Static Water Lev. (In Ft.):	10	Date Static Level measured:	04/28/1978
Static Water Level Data Source/Driller's License #:	73061		

16  
 NE  
 1/2 - 1 Mile  
 Lower

FED USGS USGS0485585

Agency:	MN040	Site ID:	453440093360701
Site Name:	36N26W29DBCD 01		
Dec. Latitude:	45.57774		
Dec. Longitude:	-93.60218		
Coord Sys:	NAD83		
State:	MN		
County:	Miller County		
Altitude:	985		
Hydrologic code:	07010207		
Topographic:	Not Reported		
Site Type:	Ground-water other than Spring		
Const Date:	19780419	Instal Date:	19880413
Well Type:	Single well, other than collector or Ramney type		
Primary Aquifer:	Not Reported		
Aquifer type:	Not Reported		
Well depth:	132		
Hole depth:	136	Source:	Not Reported
Project no:	Not Reported		

## Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1978-04-19	26.00	

17  
 SSW  
 1/2 - 1 Mile  
 Lower

MN WELLS 3071533145



Map ID  
Direction  
Distance  
Elevation

E21  
NE  
1/2 - 1 Mile  
Lower

Database EDR ID Number

MN WELLS 3048494867

**Principal Well Information:**

Unique Well #:	494867	County:	MILLE LACS
Township:	36	Section:	29
Range:	26	Elevation (in Ft.):	Not Reported
Subsection:	Not Reported	Locator:	Not Reported
Location Method:	Not Reported	Depth Completed (in Ft.):	75
7.5 Minute Quadrangle:	Not Reported	Date drilled:	08/28/1991
Depth Drilled (in Ft.):	75	Date of Last Update:	12/21/1991
Status:	Active	Not Reported	
Geographic Coordinates Method:		Owner's Name:	Not Reported
Well Name:	ZIEGLER CONST	Local Identifier Type:	Not Reported
Local Identifier:	Not Reported	86270	
Data Source/Driller's License #:		Depth Cased (in Ft.):	70
Casing Diam (in):	4	Permit Type:	Not Reported
Permit #:	Not Reported	Wellhead Protection Area:	Not Reported
First Bedrock:	Not Reported	Open Interval-Bottom Unit:	Not Reported
Open Interval-Top:	Not Reported	Well Grouted ?:	Yes
DNR Application #:	Not Reported	Date Well Abandoned:	Not Reported
Well Sealed ?:	Not Reported		
Aquifer:	Not Reported		
Depth to Bedrock (Ft.):	Not Reported		
Any other Unused, Abandoned Well on Property ?:	Not Reported		
Potential Pollution Source Type:	Septic Tank/Drain Field		
Potential Pollution Source Distance (in Ft.):	75		
Potential Pollution Source Direction:	W		
Use:	Domestic		
Elevation Method:	Not Reported		
Data for this well are contained in the DNT Observation Well Network Data base:	Not Reported		
Indicator that an entry for this well exists in the State Water Use Data System:	Not Reported		
Data exist for this well in the PCA Integrated Ground-Water Information System:	Not Reported		
Indicator of the availability of cuttings, core or downhole geophysical data for this well:	Not Reported		
Indicator of the existence of a digitized UTM location for this well:	Not Reported		

**Well Address Information:**

Well Address: RT 4  
PRINCETON, MN 55371

**Owner/Contact Address Information:**

Owner's Address: 11637 197TH AV NW  
ELK RIVER, MN 55330

**Coliform/Nitrate/Static Water Level Information:**

Coliform Bacteria Count:	Not Reported	Detection Limit Flag:	Not Reported
Coliform Sampling Date:	Not Reported	Coliform Analysis Source:	Not Reported
Colif. Analyis. Reliability:	Not Reported	Bacteria Analysis Technique:	Not Reported
Nitrate Count (mg/l):	Not Reported	Nitrate Detection Limit Flag:	Not Reported
Nitrate Sampling Date:	Not Reported	Nitrate Analysis Source:	Not Reported
Nit. Analyis. Reliability:	Not Reported	Nit. Analysis Technique:	Not Reported
Static Water Lev. (in Ft.):	18	Date Static Level measured:	08/28/1991
Static Water Level Data Source/Driller's License #:		86270	

### TOPOGRAPHIC INFORMATION

#### **USGS 7.5' Digital Elevation Model (DEM)**

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

### HYDROLOGIC INFORMATION

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI: National Wetlands Inventory.** This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

### HYDROGEOLOGIC INFORMATION

#### **AQUIFLOW<sup>®</sup> Information System**

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the data of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

### GEOLOGIC INFORMATION

#### **Geologic Age and Rock Stratigraphic Unit**

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, *Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Bellman Map, USGS Digital Data Series DDS - 11 (1994).*

#### **STATSGO: State Soil Geographic Database**

Source: Department of Agriculture, Natural Resources Conservation Services

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

### ADDITIONAL ENVIRONMENTAL RECORD SOURCES

#### **FEDERAL WATER WELLS**

##### **PWS: Public Water Systems**

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

##### **PWS ENF: Public Water Systems Violation and Enforcement Data**

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

##### **USGS Water Wells: USGS National Water Inventory System (NWIS)**

This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

## **SITE OBSERVATIONS**

The property is an existing farmstead.

## **BORING LOCATIONS AND ELEVATION**

The number of borings and their locations were determined by the Client and staked in the field. Boring locations with elevations are shown on the enclosed Site Drawing prepared by Land Surveyor, E.G. Rud & Sons.

## **FIELD INVESTIGATION**

The borings were accomplished using the Standard Penetration Test (SPT) method of investigation using a Split-Barrel Sampler (SBS). An attachment describes the soil classification system used (Unified).

## **SOIL BORING RESULTS**

Refer to the individual boring logs for a detailed description of soils and moisture conditions encountered. Attached to the soil boring logs is a key explaining terms and entries. The depth of individual layers of soils may vary somewhat from those indicated on the logs due to unsampled intervals between split-barrel sampler tests and, most importantly, the occurrence of transition between soil layers. Also, soil profiles not in the vicinity of the borings may vary. Refusal to auger advancement was not encountered at the boring locations, indicating lack of bedrock to depths tested.

Groundwater was encountered in all of the bore holes. The water level checks were performed at the completion of the boring and at varying times after the boring. The recordings are depicted in the boring logs. Groundwater levels may occur and vary according to various climatological and meteorological influences undetermined within the tie frame, scope and budget allowed in this investigation. In addition, area development patterns can influence groundwater. The indicated groundwater results are for conditions at the time of testing only.

## **CONCLUSIONS AND RECOMMENDATIONS**

The following conclusions and recommendations are based upon interpreted results of boring logs. Because the borings represent a small portion of the site in relation to the proposed area of work, ongoing review of construction should be carried out. If excavations reveal subsurface soils of a different nature than those observed in the boring, the Geotechnical Engineer should be contracted for possibly revised recommendations (see the following sections below; 6. Inspections and Testing and 10. Limitations of Investigation).

### **1. General Site Suitability**

No specific loading information was given to Development Engineering at the time of this report.

## **6. Inspection and Testing**

The recommendations in this report are based on the subsurface conditions found at our test boring locations. Soil conditions can be expected to vary away from the soil boring locations, we recommend on-site observation by a Geotechnical Engineer or technician during construction to evaluate these potential changes. Soil density testing should be performed on new fill placed in order to document that the project specifications for compaction have been satisfied. Documentation should be provided on all house pads and roads including oversizing, depths of excavation, final pad size and elevations of the finished grades of compacted engineered fill.

## **7. Final Site Topography**

Final soil surfaces should be graded to provide adequate drainage from structures and hard surfaces so that as little water as possible infiltrates into soils adjacent to the structures. The areas adjacent to footing walls should be adequately compacted, not loosely placed, to avoid this zone acting as a "sump" and creating nuisance conditions in the building area.

## **8. Pavement Subgrade Preparation**

We refer to the attached sheet entitled "Bituminous Pavement Subgrade Preparation and Design" for information on pavement design and subgrade preparation including items such as test roll evaluation, subgrade drainage and compaction recommendations.

After removal of topsoil we anticipate that granular base soils should be suitable pavement subgrade material after surface compaction. After subgrade preparation, the stability of the pavement subgrade should be evaluated by means of a test roll prior to paving. New fill should be compacted per the Specified Density Method (MnDOT Specification 2105.3f1).

Parking lots and driveways should have clearance from maximum anticipated groundwater levels. This groundwater clearance, as practical, should be three feet or more from known groundwater level.

## **9. Pavement Section Thickness Design**

The thickness of pavement section will depend on the type of material present within the upper portion of the subgrade. It is assumed that this subgrade material will consist of the existing silt or sandy loams found on this site. In this report, we recommend the pavement design be based on an R-value of 70, AASHTO Soil Type A-3.

## **10. Limitations of Investigation**


The Geotechnical Engineer has prepared this report using an ordinary level of care and in accordance with generally accepted foundation and soil engineering practices. Because the borings represent only a small portion of the total site and for other reasons, Development Engineering, P.A., does not warrant that the borings are necessarily representative of the entire site but only of the boring locations at the time of investigation. No warranty of the site is made or implied. The boring logs should only be used in preliminary design and estimating work and in conjunction with corrective procedures.

DEVELOPMENT ENGINEERING, PA **SOIL BORING LOG**

1296 Hudson Road  
St Paul, Mn 55106

PROJECT: 200 Acres Site, Princeton, Mn

LOG OF BORING NO: 2

DEPTH IN FEET	SURFACE ELEVATION: 980.89		GEOLOGY	N	WB	SAMPLE			LAB & OTHER TESTS			
	DESCRIPTION & CLASSIFICATION					#	TYPE	R	W	DEN	LL/P.L.	
1-	(0'-1') Black, Organic Sand, fine grained, poorly graded (OL-SP), Very Moist, Very Loose		Glacial Outwash 	1	N	1	SBS	18				
2-	(1'-20') Grey Sand, fine grained, poorly graded, (SP), Very Moist, Very Loose											
3-				2.5	N	2	SBS	16				
4-	Brown and mottled @ 2.5'											
5-	Wet @ 3.5'											
6-	Loose @ 5'			7	Y	3	SBS	15				
7-												
8-	Light Brown @ 7.5'			5	Y	4	SBS	16				
9-												
10-												
11-				WT	Y	5	FA					
12-												
13-				WT	Y	6	FA					
14-												
15-												
16-				WT	Y	7	FA					
17-												
18-				WT	Y	8	FA					
19-												
20-				WT	Y	9	FA					
21-	End of Boring @ 20'. No Refusal.								WEATHER: Clear			
									TEMP: 85°			

WT = weight of truck


WATER LEVEL MEASUREMENTS							DRILLING DATA				
DATE	TIME (HRS)	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL					
8/28/03	2:00	20'	20'	N/A	N/A	6.6' BCR	CREW CHIEF: <u>ELS</u> METHOD: <u>3.25 HSA</u> <u>2" OD SBS</u> <u>F-350 CME 45B</u>				
8/28/03	2:15			3.4'	N/A	Wet ACR					
8/29/03	9:45			3.4'	N/A	Wet					
							BORING COMPLETED:		8/28/03		

## SOIL BORING LOG

1296 Hudson Road  
St Paul, Mn 55106

PROJECT: 200 Acres Site, Princeton, Mn

LOG OF BORING NO: 6

DEPTH IN FEET	SURFACE ELEVATION: 988.42		GEOLOGY	N	WB	SAMPLE			LAB & OTHER TESTS				
	DESCRIPTION & CLASSIFICATION					#	TYPE	R	W	DEN	L.L./P.L.		
1-	(0'-1') Black, Organic Sand, fine grained, poorly graded (OL-SP), Dry, Loose		Glacial Outwash  	6	N	1	SBS	18					
2-	(1'-20') Brown Sand, fine grained, poorly graded (SP), Dry, Loose												
3-	Mottled @ 2.5'			8	N	2	SBS	11					
4-													
5-	Moist and Mottled @ 5'												
6-													
7-					9	N	3	SBS	14				
8-	Wet @ 7.5'				5	Y	4	SBS	13				
9-													
10-													
11-					6	Y	5	SBS	16				
12-													
13-					WT	Y	6	FA					
14-													
15-													
16-					WT	Y	7	FA					
17-													
18-					WT	Y	8	FA					
19-													
20-					WT	Y	9	FA					
21-	End of Boring @ 20'. No Refusal.									WEATHER: Cloudy			
										TEMP: 70°			

WT = weight of truck

## WATER LEVEL MEASUREMENTS

## DRILLING DATA

DATE	TIME (HRS)	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL	
8/29/03	10:30	20'	20'	N/A	N/A	9.2'	BCR
8/29/03	10:45			7.2'	N/A	Wet	ACR
8/29/03	12:10			7.1'	N/A	Dry	

CREW CHIEF: ELS

METHOD: 3.25 HSA

2" OD SBS


F-350 CME 45B

BORING COMPLETED:

8/29/03

PROJECT: 200 Acres Site, Princeton, Mn

LOG OF BORING NO: 10

DEPTH IN FEET	SURFACE ELEVATION: 982.12		GEOLOGY	N	WB	SAMPLE			LAB & OTHER TESTS			
	DESCRIPTION & CLASSIFICATION					#	TYPE	R	W	DEN	LL/P.L.	
1-	(0'-1') Black, Organic Sand, fine grained, poorly graded (OL-SP), Moist, Loose		Glacial Outwash  	7	N	1	SBS	14				
2-	(1'-2') Dark Brown Sand, fine grained, poorly graded (SP), Mottled, Moist, Loose											
3-	(2'-20') Brown Sand, fine grained, poorly graded (SP), Moist, Loose			11	N	2	SBS	15				
4-												
5-	Light Brown and Very Moist @ 5'											
6-												
7-	Wet @ 6.5'			9	Y	3	SBS	16				
8-				8	Y	4	SBS	16				
9-												
10-												
11-				WT	Y	5	FA					
12-												
13-				WT	Y	6	FA					
14-												
15-												
16-				WT	Y	7	FA					
17-												
18-				WT	Y	8	FA					
19-												
20-				WT	Y	9	FA					
21-	End of Boring @ 20'. No Refusal.									WEATHER: Sunny		
										TEMP: 75°		

WT = weight of truck

## WATER LEVEL MEASUREMENTS

## DRILLING DATA

DRILLING DATA						
DATE	TIME (HRS)	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
9/2/03	10:30	20'	20'	N/A	N/A	7.0' BCR
9/2/03	10:45			6.3'	N/A	Wet ACR
9/2/03	10:55			6.1'	N/A	Dry
CREW CHIEF: ELS						
METHOD: 3.25 HSA						
2" OD SBS						
F-350 CME 45B						
BORING COMPLETED:					9/2/03	

# SOIL BORING LOG

**1296 Hudson Road  
St Paul, Mn 55106**

**PROJECT: 200 Acres Site, Princeton, Mn**

LOG OF BORING NO: 14

[illegible]

**WT** = weight of truck

## WATER LEVEL MEASUREMENTS

## DRILLING DATA

DRILLING MEASUREMENTS						DRILLING DATA	
DATE	TIME (HRS)	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL	
9/2/03	2:20	20'	20'	N/A	N/A	7.2'	BCR
9/2/03	2:35			4.0'	N/A	Wet	AGR
9/2/03	2:45			3.9'	N/A	Dry	

CREW CHIEF: ELS

METHOD: 3.25 HSA

2" OD SBS

F-350 CME 45B

BORING COMPLETED:                      9/2/03



## GENERAL TERMINOLOGY NOTES FOR SOIL IDENTIFICATION AND DESCRIPTION

### GRAIN SIZE

<u>Term</u>	<u>ASTM</u>
Boulders	Over 12"
Cobbles	3" to 12"
Gravel	#4 sieve to 3"
Sand	#200 to #4 sieve
Fines (silt and clay)	Pass #200 sieve

### GRAVEL PERCENTAGES

<u>Term</u>	<u>Percent</u>
A little Gravel	3% to 15%
With Gravel	15% to 30%
Gravelly	30% to 50%

### CONSISTENCY OF PLASTIC SOILS

<u>Term</u>	<u>N-Value, BPF</u>
Very Soft	less than 2
Soft	2-4
Medium	5-8
Stiff	9-15
Very Stiff	16-30
Hard	Greater than 30

### RELATIVE DENSITY OF NON-PLASTIC SOILS

<u>Term</u>	<u>N-Value, BPF</u>
Very Loose	0-4
Loose	5-10
Medium Dense	11-30
Dense	31-50
Very Dense	Greater than 50

### MOISTURE/FROST CONDITION

D (Dry):	Absence of moisture, dusty, dry to touch.
M (Moist):	Damp, although free water not visible. Soil may still have a high water content (over "optimum").
W (Wet/ Waterbearing):	Free water visible. Intended to describe non-plastic soils.
F (Frozen):	Soil frozen.

### LAYERING NOTES

Laminations:	Layers less than 1/2" thick of differing material or color.
Lenses:	Pockets of layers greater than 1/2" thick of differing material or color.

### FIBER CONTENT OF PEAT

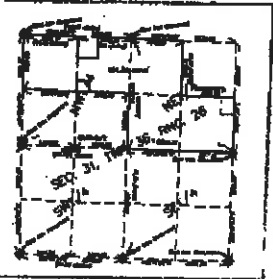
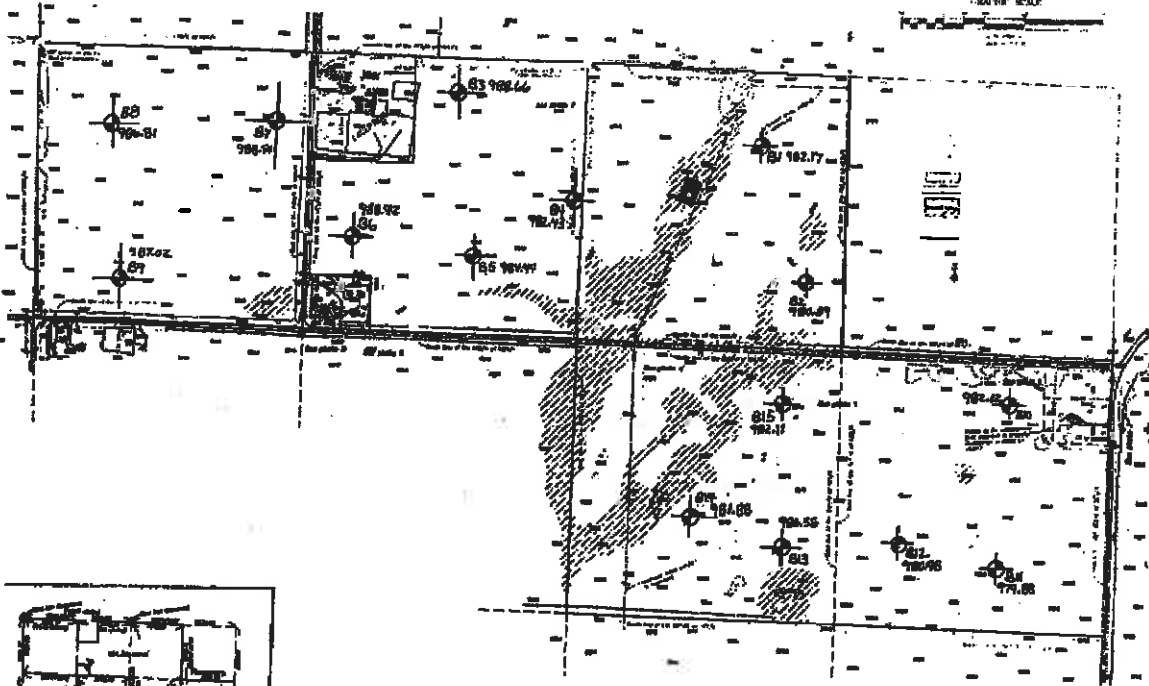
<u>Term</u>	<u>Fiber Content (Visual Estimate)</u>
Fibric	Greater than 67%
Hemic	33 to 67%
Sapric	Less than 33%

### ORGANIC DESCRIPTION

Non-peat soils are described as organic, if soil is judged to have sufficient organic content to influence the soil properties.

# BOUNDARY AND TOPOGRAPHIC SURVEY

FOR: HERITAGE VILLAGE, LLC OF FUTURE HERITAGE VILLAGE SITE



LEGEND

EG, RD & SONS, INC.  
1000 S. 10th St.  
St. Paul, MN 55108

# CITY DIRECTORIES

RR 4	55371
5941 Virgil Schmatz .85	389-2197
9023 Cary Poorker .84	389-4016
Diane Porter .84	389-4016
14 RESIDENCE	

## 90TH ST

RR 4	55371
7800 Ray Tallinghulsen .80	389-2888
8831 Mike Larson .78	389-4370
9261 Gerald Penger .70	389-1882
9363 Patty Lou Dobson .80	389-1812
9830 Myron Zoran .83	389-8816
9897 Tyrone Thomas .84	389-8864
6 RESIDENCE	

## 100TH AVE

RR 1	55371
1142 Simon W Thielens .80	389-2427
1261 Gary Anderson .63	389-3326
1687 John Edmonds .74	389-1142
1840 Robert M Pontious .79	389-4888
2012 Edward A Trunk .84	389-3381
2045 Ray Ed Sornberger .84	389-2405
* Rev E Sornberger .84	389-2405
3061 Assembly of God Ch 83	389-4888
3100 T Donner .85	389-4881
3148 Del Lantman .73	389-1233
3163 Earl N Brooks .80	389-2808
RR 4	55371
3425 Wallace Lefebvre .70	389-2326
Robert Webb .70	389-2279
2827 Harry Sakry .70	389-1141
2918 Steven Davis .84	389-4332
3021 Leonard Sanford .83	389-2838
3124 Richd R Sprossig .78	389-4077
3208 Carl G Sanford .83	389-4050
3510 Bernard Sanford .83	389-2838
3558 Douglas Sanford .83	389-2838
4081 Richard W Sanford .78	389-1675
4854 Clifford Bergfeld .80	389-2148
4897 Daniel Minks .80	389-1520
* Go Driving School .85	389-2823
4989 Bernard Minks .80	389-2849
5127 Rodney Clemans .78	389-2249
5465 Bill Irvine .80	389-3288
5487 R C Masonry Cnstr 87	389-4220
7206 Kurt Homstad .85	389-3882
7403 Laurence Winter .71	389-4987
7946 Mid-St Bldg Rector 84	389-8888
7992 Anton J Ranko .73	389-2187
27 RESIDENCE	5 BUSINESS

## 100TH ST

RR 4	55371
2844 Lee Komula .84	389-8880
2972 Greg Bach .84	389-1882
Chad Welu .84	389-1882
7741 Robert F Gakus .84	389-4133
824 Ed Minator .80	389-3223
3024 Swain Wudtke .80	389-3703
30104	
EX123 Joe Febbo .83	389-2188
1132 Michelle Buismen .80	389-2702
1224 Eugene Thronson .80	389-3262
1241 Erma M Nielsen .80	389-1827
30310 Edward Weissenfuh 83	389-4011
30332 L E Weissenfuh .84	389-1918
12 RESIDENCE	

## 104TH ST

RR 6	55371
31358 Peter Potvin .80	389-2487
31812 Sharon K Henton .80	389-2188
Brian Trux .80	389-2188
RR 6	55371
113 Steve Whitcomb .78	389-4824
32141 Wm L Ciskovsky .80	389-1817
32237 George Berning .82	389-3748
33309 Thomas Garkink .82	389-2808
7 RESIDENCE	

## 108TH AVE

RR 1	55371
2302 Teresa Winkelman .82	389-3768
4838 J Watson .84	389-8180
4838 Randall Minkovic .88	389-3848
Robert O Minkovic .80	389-4827
* R O Minkovic CPA .80	389-4827
RR 4	55371
7571 Mark S Wilhelm .78	389-1115
1312 Joe L Deglmann .87	389-2859
1373 Darlene Sipe .72	389-4808
7 RESIDENCE	1 BUSINESS

## 107TH AVE

New Street-1995.	
RR 1	55371
2214 Larry Rolfe .80	389-9480
1 RESIDENCE	

## 108TH ST

RR 9	55371
20441 Curt Hofius .80	389-8228
20802 Spencer Angstrom .80	389-4088
20933 Duane G Nelson .88	389-3330
20738 Robert Laroux .80	389-8281
20611 Wayne G Olson .83	389-1443
20640	
20608 Sue Costello .91	389-3181
Clarence Wenzel .80	389-4743
Clarence Wenzel .84	389-8218
* Time Pkg&Hng Svc 80	389-4743
* Clarence Wenzel .71	389-4743
30010 Robert Kraft .80	389-4237
30038 Terry Daniels .73	389-4589
30043 Bruce Keun .87	389-2847
30117 Robert Steinberg .88	389-5081
Eldon Zasko .80	389-5081
30140 Clayton Sorenson .80	389-2183
30234 George D Classen .80	389-4728
30448 Gary Hulet .81	389-8147
30311 Bill Arsenau .80	389-4467
30635 Edwin A Hess .82	389-8847
30610 Harold Cordes .74	389-4828
30631 Dale Rittenour .72	389-2310
30702 Dale Nordby .73	389-4883
30781 Joel R Bartz .78	389-4844
30848 Phil Alderink .87	389-1838
31000 Lyle Vanblarcom .81	389-8418
25 RESIDENCE	2 BUSINESS

## 110TH AVE

RR 1	55371
1817 Larry McGhan .80	389-2847
1824 Greg Anderson .80	389-1684
1548	
R. Davidson .83	389-8373
1633 Clairmont Keeler .84	389-3238
RR 6	55371
1732	NP
RR 4	55371
3974 Michelle Andersberg .83	389-8222
8221 Kenneth Hansen .80	389-8087
8287 John A Kuehn .81	389-1820
8888 Jake Koppendraye .70	389-1897
8015 Michael Englar .84	389-9882
8167 Lance Erickson .80	389-1088
8488 Harm Heinke .81	389-2930
12 RESIDENCE	

## 112TH AVE

RR 4	55371
7182 Howard Klofstad .84	389-1484
7186 June A Henton .89	389-5084
2 RESIDENCE	

## 112TH ST

New Street-1993.	
RR 5	55371
32212 James Peterson .89	389-2876
32421 Thomas Reynolds .80	389-4124
2 RESIDENCE	

## 115TH AVE

RR 1	55371
1231 Scott Angstrom .80	662-2170
1497 Leo Stalnagren .88	662-2771
1874	NP
1842 Steve Lundeen .80	389-2847
1878 Glen Hansen .70	389-4386
2012 Robert Nixon .74	389-4283
2084 Michael Wilkins .82	389-8217
2188 Keith Julson .82	389-8286
2278 Matthew Miller .81	389-8372
2338 Theresa Meyer .80	389-8768
Joel Vandenberg .80	389-8768
2394 Morris Polman .75	389-4333
2408 James A Wnuk .78	389-2827
2428 Furniture Dgns .88	662-3487
2481 Leonard Bergeron .82	389-8488
2531 Dale E Anderson .78	389-4174
2787 Ralph Benik .83	389-8803
2788 Dean Corling .78	389-4281
2812 V R Buffington .80	389-8837
P Okfor .80	389-8888
2808 Paul Dunker .80	389-8288
2871 Clifford Peterson .83	389-2331
3204 Don Talberg .84	389-1730

RR 4	55371
3885 V M Anderson .89	389-2888
4789 Gerald Wasiah .89	389-2538
24 RESIDENCE	1 BUSINESS

## 118TH ST

RR 6	55371
29028 Carl J Reibestein .80	389-3728
30028 Carque Quality Hm .91	389-8888
30107 Dennis Pederson .84	389-8208
30126 Laverne F Eller .87	389-3758
30209 Duane Weissenfuh .81	389-8828
30313 Tim Pfundt .88	389-2768
Scott Weissenfuh .85	389-8714
30134 Joseph Bakos .88	389-8878
30428 Randy L Black .93	389-2328
30518 Steve Sanborn .87	389-1842
30844 Robert Anderson .80	389-9888
30838 Richard Mosser .80	389-1881
30739 Chris Kardong .91	389-2824
30845 David Fowler .80	389-4181
31636 Dennis Almen .80	389-8718
14 RESIDENCE	1 BUSINESS

## 117TH ST

New Street-1995.	
18112 Douglas Hafften .80	662-2118
1 RESIDENCE	

## 120TH AVE

RR 1	55371
2468 G Schutz .89	389-2482
2551 Arles Forchan .80	389-4887
2882 Tracey Foley .83	389-2710
2888 Donald L Olson .84	389-3488

RR 4	55371
2871 Arvid Pederson .80	389-3317
2937 Andrew Rotz .80	389-8008
2938 Dennis C Alcockson .82	389-8884
3142 Sheryl J Johnson .82	389-8828
3204 Kenneth D Jensen .80	389-8883
3384 Richard Swedean .81	389-8841
3385 Ray Quigley .80	389-3318
3888 S Nelson .82	389-4841
4383 David Trunk .84	389-2788
4384 Carl Nelson .85	389-3088
4748 Ruben Peterson .80	389-1388
4787 Dewayne Arthur .77	389-3088
4878 Robert Deglmann .87	389-1887
5131 Llewelyn Northway .73	389-1287
5174 Clarence Steeves .80	389-1887
5283 Brent Betzler .80	389-2241
20 RESIDENCE	

## 120TH ST

RR 6	55371
28434 Timothy Porter .80	389-2488
28513 Les Mazo .80	389-5183
K McCormick .80	389-5183
28528 William George .78	389-2810
28540 Leo Modderman .80	389-1078
28727 Raeburn E Kriesel .81	389-2811
28820 Gerald R Owens .71	389-4782
28841 Charlotte Wallin .89	389-2082
31720 Terry Hible .79	389-4817
31737 Earl Hamann .81	389-1133
31806 May Hible .82	389-5880
11 RESIDENCE	

## 121ST ST

RR 6	55371
31337 Mark Walsh .84	389-5234
31340 Paul Neubauer .80	389-8788
2 RESIDENCE	

## 122ND ST

RR 6	55371
31135 David R Boudin .83	389-5188
31132 Curt Winkelman .89	389-2028
31320 Donald Krob .84	389-2307
31325 Michael Fesbender .82	389-8878
31322 J L Swenson .89	389-8983
31335 Darwin Swenson .81	389-4888
8 RESIDENCE	

## 123RD ST

RR 6	55371
31238 Bradley Bclair .84	389-8001
31803 R Affelt .77	389-3074
31811	NP
31818 Jared Jensen .88	389-4883
31820 Daniel Ciskovsky .89	389-1818
8 RESIDENCE	

## 124TH ST

RR 6	
31443 Brad George .80	
31481 R W Builders Inc	
31723 Dennis F Thompson	
31841 R D Winkelman	
32032 Skogquist Trcking	
* Skogquist Trcking	
32232 Haul-A-Dog Inn	
32273 Lay It Again Sam	

RR 3	
32312 Winkelman Lumber	
2 RESIDENCE	

## 125TH AVE

RR 4	
4717 Kevin Homstad .80	
5838 Clifford Talberg .80	
6382 Steve Deglmann .80	
6474 Gary Enler .80	
8808 Walter Deglmann .80	
8828 Gary Deglmann .80	
8838 Marlin Ege .80	
8722 Sam Elfrson .80	
8 RESIDENCE	

## 125TH ST

RR 3	
31516 Liquidn Warehouse	
31530 Sidmar Mfg Inc	
31840 Ernest Wallin .80	
* Ew Tooling .80	
* Ernest Wallin .80	
31808 Freedom Auto Pnc	
31840 Foundation Realty	
* Princeton Crpt&Lnm	
32010 Princeton Rental	
32022 Subway	
1 RESIDENCE	

## 125 1/2 ST NW

New Street-1981.	
21413 Cance Prop Shop	

## 127TH AVE

RR 1	
2781 Fred Vanthoven	
1 RESIDENCE	

## 127TH ST

RR 2	
31230 Jerome Sandberg	
31232 Harold O Bergeson	
31243 Kenneth Sandberg	
31603 Joseph A Reilly	
31608 Anthony K Blais	
31817 Paul Carlson	
31818 Craig Hugget	
Wendy Mikaska	
31823 Darryn Birkholz	
* Deluxe Hrdwd Flrs	
31826 Wayne R Soons	
31827 David Freese	
31833 Darrell King	
31847 Thomas R Philippi	
12 RESIDENCE	

## 128TH ST

RR 6	
28343 Lisa D Vigdal	
RR 7 38900-38908 E	
RR 6 38901-38909 O	
28804 G Franklin	
28813 Richd Vanbusckom	
28840 William Vabch	
28888 Randy Holten	
28835 Tom Minster	
28711 William Rubin	
28728 Jerry Leadens	
28804 Leon Dux	
28822 Thomas J Johnson	
28838 Edmund Bargaquist	
RR 6	
28913 Alfred Houran	
30004 Georgia June	
Chris Cleason	
RR 7	
30120 John Hoppe	
30141 Chellis L Matz	
30256	NP

## 70TH AVE

55371	
on 70	389-3787
ten 70	389-3088
3000 70	389-1778
NP	
Edger 71	389-3181
..84	389-1478
..62	389-3228
..60	389-1877
..84	389-5478
122	389-3880
..84	389-3741
55371	
..84	389-4047
..83	389-3883
..82	389-5542
..81	389-9845
..81	389-1288
..87	389-3838
..87	389-0387
..81	389-3484
..81	389-5827
..88	389-4823
..84	389-5882
..81	389-2939
..80	389-4818
100 83	389-1848

## 55371

..80 389-1988

## 55371

..81 389-3540  
 ..87 389-3540  
 ..87 389-1840  
 ..81 389-2189  
 ..82 389-4972

## 55371

..75 389-2230  
 ..75 389-3512  
 ..85 389-8284  
 ..80 389-1242  
 ..89 389-1087  
 ..89 389-3838  
 ..81 389-9702

## 55371

..84 389-4079  
 ..86 389-0008  
 ..84 389-2423

## 55371

..87 389-0887  
 ..82 389-3878

## 55371

..88 389-1088  
 ..78 389-2007  
 ..87 389-4028  
 ..87 389-4028

## 55371

..83 389-4218  
 ..84 389-3780  
 ..84 389-3022  
 ..84 389-3222  
 ..84 389-0812  
 ..84 389-1480  
 ..88 389-8488  
 ..85 389-2820  
 ..81 389-2088  
 ..84 389-2707  
 ..84 389-9021  
 ..84 389-3888  
 ..84 389-8008  
 ..81 389-2850  
 ..81 389-2712  
 ..81 389-0112  
 ..84 389-1880  
 ..84 389-4018  
 ..84 389-2844  
 ..81 389-8307  
 ..81 389-4488

## 70TH AVE

55371	
1872	Rev Marvin Blacka 95 389-1288
	*Black Marvin Rev 74 389-1288
	*Zion Lutheran Ch 84 389-1288
	*Zion Luth Ch Prang 86 389-1288

55371	
6101	Ray Bekus 88 389-1888
6202	Craig Burlingame 70 389-1106
6838	Wayne Dalschow 87 389-2184
7083	Richard C Ernst 88 389-9588
7818	
8288	Gary Gray 77 389-4828
7841	Nell Gray 84 389-3878
7837	Harry K Moses 88 389-4008
7839	Dannik Eichinger 84 389-5346
	Mary F Ward 84 389-5346

7878	Apartment
A	Dick Mathewman 8 389-3788
	Jessica Paus 81 389-0288
7789	L M Evans 87 389-1177
	Michi Floerhinger 87 389-1177
8342	Larry A Johnson 88 389-9028
8381	Gerald Bragge 71 389-4834
8724	Steven L Peterson 80 389-8437

## 70TH ST

55371	
7802	Robert Hallberg 93 389-1801
7804	C A Matson 88 389-3828
8074	Jerry Erickson 84 389-4434
8128	Bill Haroldson 87 389-8888
8183	Doug Hanchen 88 389-3448
8808	George Boettcher 72 389-4888
8237	W Bobb 87 389-0888
8446	Brian L Elgin 88 389-3884
8782	Todd Ellington 87 389-0311
8784	Steven P Nelson 88 389-4380
10842	Alan R Williams 88 389-8108

## 72ND AVE

New Street-1982

55371	
1844	Robert Gaylor 84 389-8881
1878	Bill Wawers 83 389-8183

## 75TH AVE

55371	
2142	L Scheupp 88 389-0188
	V Wedewisch 81 389-8783
3174	Donald W Luck 95 389-4824
3181	Marvin Woodhouse 87 389-4334
3206	P L Hobert 88 389-1042

2247	Jin Miller 88 389-3084
2273	J M Leadway 83 389-3817
2308	Tharold Whitcomb 81 389-2088
2342	Arnold W Altemeyer 73 389-2288
2387	
2409	Patricia Rued 8 389-8480
2421	

2428	George Fink 81 389-9840
2443	Merlin M Hanson 75 389-4888
2448	Erna Rust 79 389-1093
2488	Douglas B Pettan 88 389-1138
2487	Abney Racyolo Inc 88 389-8830
2534	Russell V Klein 88 389-8780
2588	Roger Stay 78 389-3871
2841	Lloyd Corlies 88 389-3833
2738	Steve Blythe 81 389-4721
	Florence Ziebarth 83 389-2288
2782	Rodney Bloss 8 389-1987
	*D & L Supper Club 88 389-8788
2824	Doug Zentner 81 389-8887
2883	Tony M Kookman 74 389-4888
2878	Michael R Johnson 87 389-4814

55371	
3021	Scott Skelton 83 389-1808
3211	John Westling 82 389-2488
3283	
3218	Tom Fry 88 389-2184
3348	Fred Wilhelm 84 389-3888
3487	Thomas Loberg 88 389-1982
3888	Linda Boettcher 87 389-3371
4184	J R Nowak 81 389-8828
4483	Thomas Gaurkink 88 389-2808
4823	R Hysia 87 389-2484
4872	Rodney Brand 8 389-3007
	Ralph Keen 81 389-8888
4738	E Alvord 81 389-0738
	Greg McGroom 82 389-3231
4807	Charles Freese 80 389-4823
4824	Ellen Edmonds 88 389-4887
5018	C Mills 84 389-8888

55371	
5584	Joseph W Jacobson 87 389-4820
5838	Randy Stacy 84 389-1883
	43 RESIDENCE 2 BUSINESS

## 75TH ST

55371	
8488	Ferris Olson 81 389-8873
8884	Doug Schwantes 88 389-3723
8784	Lyle Jopp 8 389-4117

55371	
7848	Arnold Sanborn 83 389-3828
8182	Janet Burrows 88 389-3884
	6 RESIDENCE

## 76TH AVE

55371	
2404	Henry Erickson 82 389-8823
2438	Donald J Peterson 88 389-8823
2438	Lewell Schwalbe 87 389-0882
	3 RESIDENCE

## 77TH AVE

55371	
8221	Emil Stacy 83 389-1488
8232	David Kennel 77 389-2708
8383	Richard L Stearns 73 389-4883
8488	Gaynor Frye 83 389-1488
	4 RESIDENCE

## 80TH AVE

55371	
8243	Joel D Minks 84 389-8112
8284	Willie Minks 84 389-3880
8432	Tom Vrchota 88 389-0188
8738	Leo Oshman 84 389-1484
8788	Eugene Stoeckel 81 389-1318
	8 RESIDENCE

## 80TH ST

55371	
8884	David Lamm 88 389-5070
8878	Ralph Hoelt 88 389-3838

55371	
7802	Harvey Lee 78 389-4848
10771	Dean Miller 87 389-8887
10867	Steve Burroughs 82 389-8842
10918	Lee A Fraher 78 389-8771
	6 RESIDENCE

## 82ND AVE

55371	
3023	John Steven Peters 8 389-5047
3084	Gerald Staringer 74 389-2778
3208	Debi Peterson 88 389-4000
3878	Ben Smithers 84 389-1888
	4 RESIDENCE

## 88TH AVE

55371	
3013	S W Pannay Jr 81 389-1404
3081	Don Kuether 84 389-4248
3102	Wayne L Hicks 87 389-4784
3184	Chad Barth 8 389-8887
3148	Paul Neumann 84 389-5783
3173	Tim Bradamus 88 389-3188
3277	Patty Hatch 88 389-1284

55371	
3288	Dean Eckhart 87 389-0887
3384	Floyd Malchior 84 389-8882
3401	
3418	Randy S Miller 84 389-2282
3478	Wayne Bobandier 84 389-4238
3482	
3587	Robert Alley 88 389-4774
3804	Dean Patten 84 389-1748
	D L Stalinger 8 389-0880
3808	Hofte Implement 8 389-2438
3848	
3831	Lester Hoelt 84 389-1488
3888	Richard O Gustafson 87 389-3782
4084	Gerald Gouley 88 389-4878
4301	Betty Johansen 88 389-0188
	David Johansen 88 389-0188
	Phyllis Lemay 88 389-0188
4808	Bernie Weisich 88 389-3712
5001	Marshall Dorn 88 389-8222
5002	Walter Schlimming 84 389-2878
5223	Steven Bockoven 87 389-1288
5248	
5487	Sidney Christ 78 389-2470
5808	Wayne Patten 87 389-2888
6172	Henry D Bird 74 389-2887
6248	Larry Patten 87 389-8738
6778	Otto Lader 71 389-2888

## PRINCETON

7888	Ronald Neumann 80 389-4812
7888	Tazma Taffinger 81 389-0887
7824	Kenneth C Neumann 87 389-8111
7828	Terry Norman 88 389-1048
	87 RESIDENCE 1 BUSINESS

## 88TH ST

55371	
8837	Ben Hamann 81 389-3877
	1 RESIDENCE

## 80TH AVE

55371	
3072	Douglas Petnode 88 389-4248
3084	Jeff Murray 88 389-9282
3101	Corrine Gamradt 88 389-2480
3118	Dawit Lene 88 389-4187
3148	Michael Brytownski 8 389-8883
3183	Clarence Baker 80 389-4713
3182	Michael Shea 81 389-8720
3188	Harvey D Anderson 88 389-4882
3207	Douglas Kok 78 389-4878
3218	B Hoelt 8 389-8888
3238	Daniel Osborn 88 389-0080
3242	Scott Peterson 81 389-3847
3244	James Bartz 88 389-5878

55371	
8841	Virgil Schmatz 88 389-2187
8821	J A Bandt 87 389-4888
8823	Cary Poorker 88 389-4018
	18 RESIDENCE

## 80TH ST

55371	
7832	Jay Gunderson 81 389-4788
7888	Ray Tellinghuisen 80 389-2888
8831	Mike Larson 75 389-4270
8884	John Palmer 87 389-0887
8228	James Hane 81 389-8884
8281	Gerald Pangerl 70 389-1882
8838	Myron Zoren 83 389-8818
8887	
	8 RESIDENCE

## 100TH AVE

55371	
1182	Simon W Thielon 80 389-3427
1281	Gary Anderson 83 389-3328
1887	John Edmonds 74 389-1142
1848	Robert M Pontious 78 389-4888
2012	Edward A Trunk 84 389-3281
2048	*Assembly of God 84 389-8408
2081	*Assembly of God Ch 83 389-4888
2108	T Donner 88 389-4881
2148	Del Liestman 73 389-1233
2183	Earl N Brooks 80 389-2888

55371	
2428	Wallace Lafabre 70 389-2238
	Robert Webb 88 389-2278
2827	Henry Sakry 70 389-0141
2818	Steven P Davis 84 389-4322
3021	Leonard Sanford 88 389-2828
3124	Richard R Spradley 78 389-4887
3208	Carl G Sanford 83 389-4080
3218	Bernard Sanford 83 389-2838
3888	Douglas Sanford 83 389-2838
3748	Roger C Nelson 88 389-4220
4081	Richard W Sanford 78 389-1878
4884	Clifford Bergfeld 80 389-2148
4887	Daniel Mink 88 389-1838
	*Go Driving School 88 389-2822
4888	Bernard Mink 80 389-2848
5127	Rodney Clemans 78 389-2248
5188	
5488	Bill Irvine 88 389-3288
5488	Ronald H Werner 87 389-1900
	*Werner Ronald H 87 389-1900
	*Werner Garage 87 389-1900

5487	
7208	Kurt Homstad 88 389-3882
7408	Laurence Winter 71 389-4887
7847	Scott Pevlin 8 389-8404
7848	Gerald Morris 87 389-0784
7882	Anton J Renko 73 389-2187
	22 RESIDENCE 8 BUSINESS

## 100TH ST

55371	
28040	Leo Komula 84 389-8880
28047	Richard Lindahl 88 389-8818
28722	Joe Cantrell 8 389-3078
	Chad Wulu 84 389-5842
28741	Robert F Gallus 88 389-4133
28818	Brad Behn 87 389-0888
	Briony Laumer 87 389-0888

SUBURBAN



## Sanborn® Map Report

**Ship To:** Marcae Woodward  
Delta Environmental  
5910 Rice Creek Parkway  
Shoreview, MN 55126

**Order Date:** 2/18/2004 **Completion Date:** 2/19/2004

**Inquiry #:** 1131386.2a

**P.O. #:** NA

**Site Name:** Heritage Village

**Address:** Highway 95 and 100th Avenue

**City/State:** Princeton, MN 55371

**Cross Streets:** 17th Street

**Customer Project:** A004-111-1.0001  
11339SMI 651-639-9449

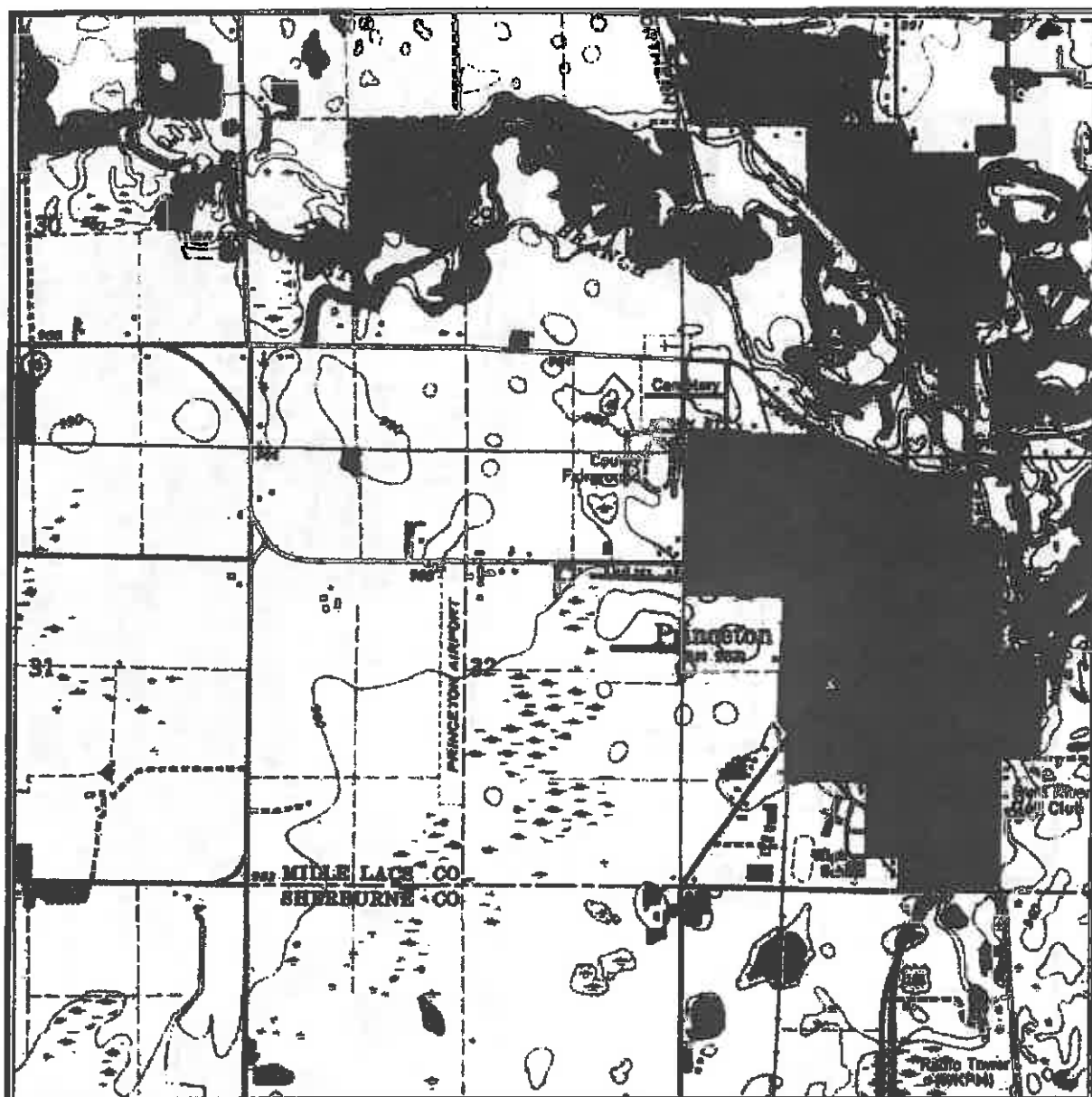
This document reports that the largest and most complete collection of Sanborn fire insurance maps has been reviewed based on client supplied information, and fire insurance maps depicting the target property at the specified address were not identified.

**NO COVERAGE**

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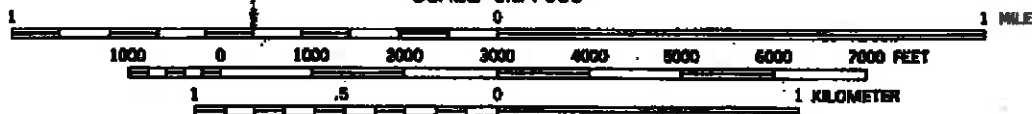
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# HISTORICAL MAPS



UNITED STATES GEOLOGICAL SURVEY 7.5 MINUTE SERIES TOPOGRAPHIC MAP

SCALE 1:24 000



**H**istorical  
**I**nformation  
**G**atherers, Inc.

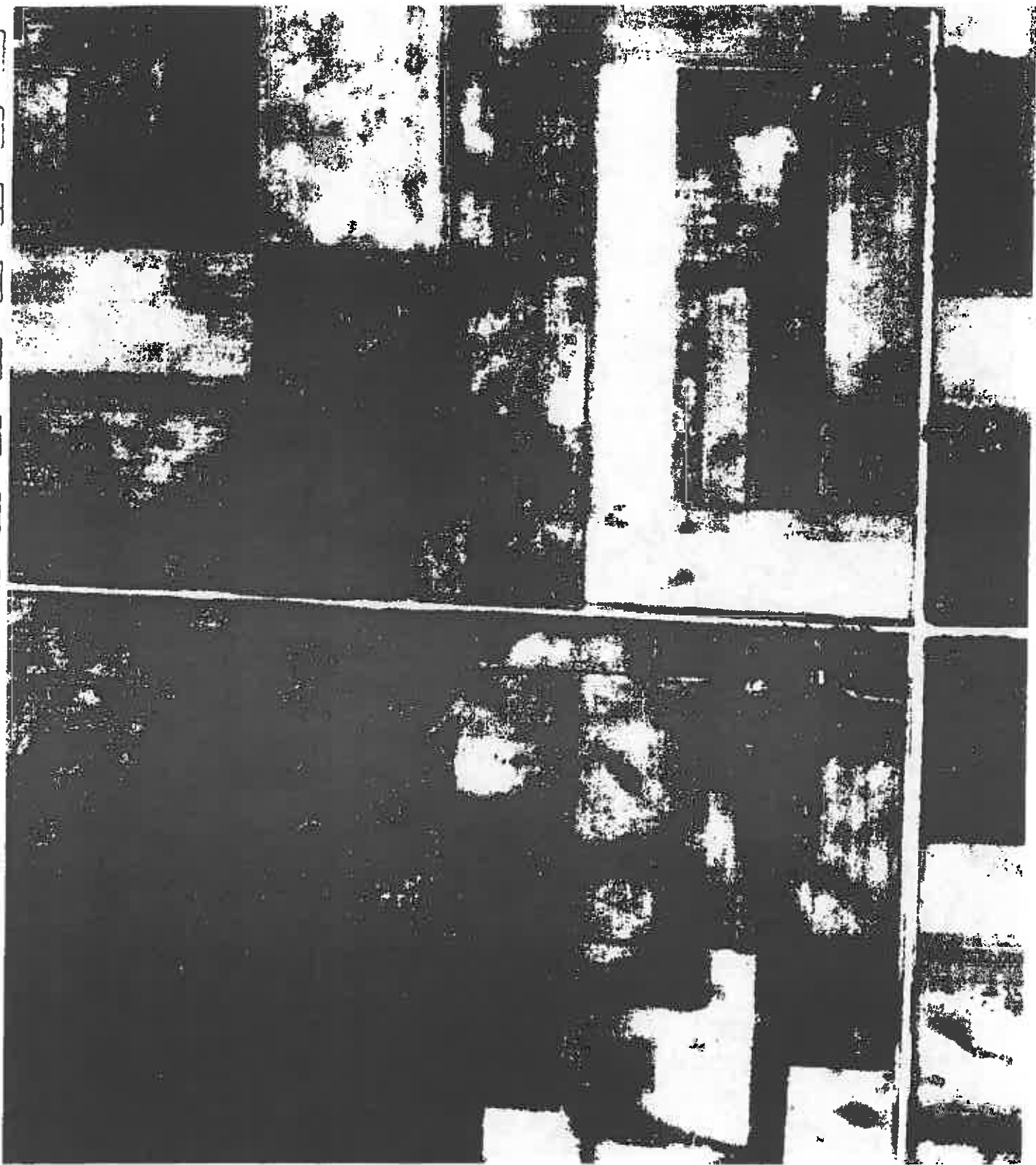


PRINCETON, MINN.

1968



**APPENDIX F**  
**Aerial Photographs**



**H**istorical  
**I**nformation  
**G**atherers, Inc.

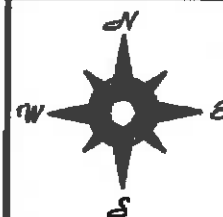
Heritage Village  
Princeton, Minnesota

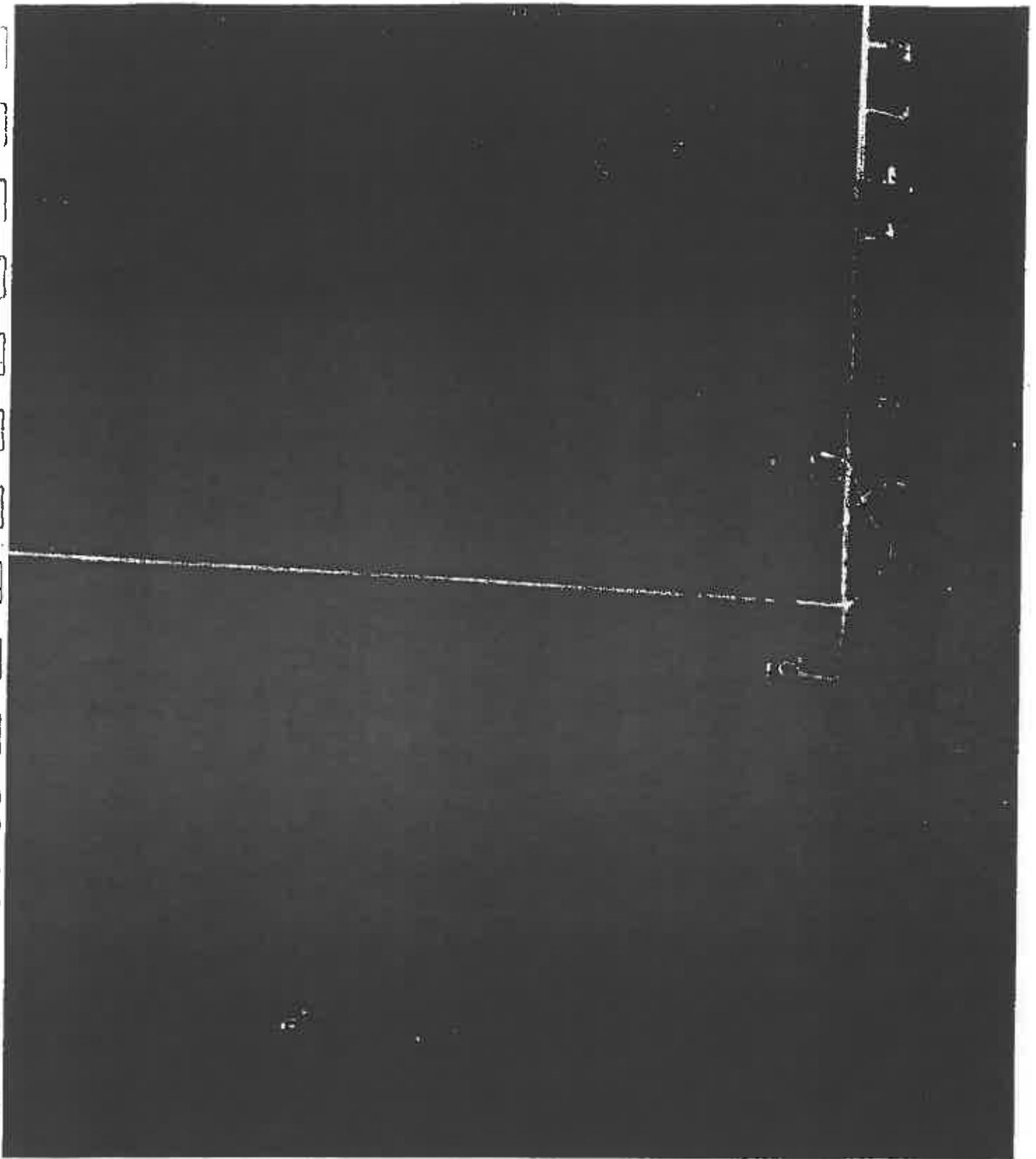
1939

HIG Project Number: MAE-1174

Client Project Number A004-111-1.0001.

Approximate Scale 1:6000 (1"=500')





**H**istorical  
**I**nformation  
**G**atherers, Inc.

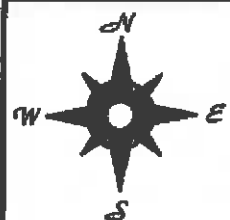
Heritage Village  
Princeton, Minnesota

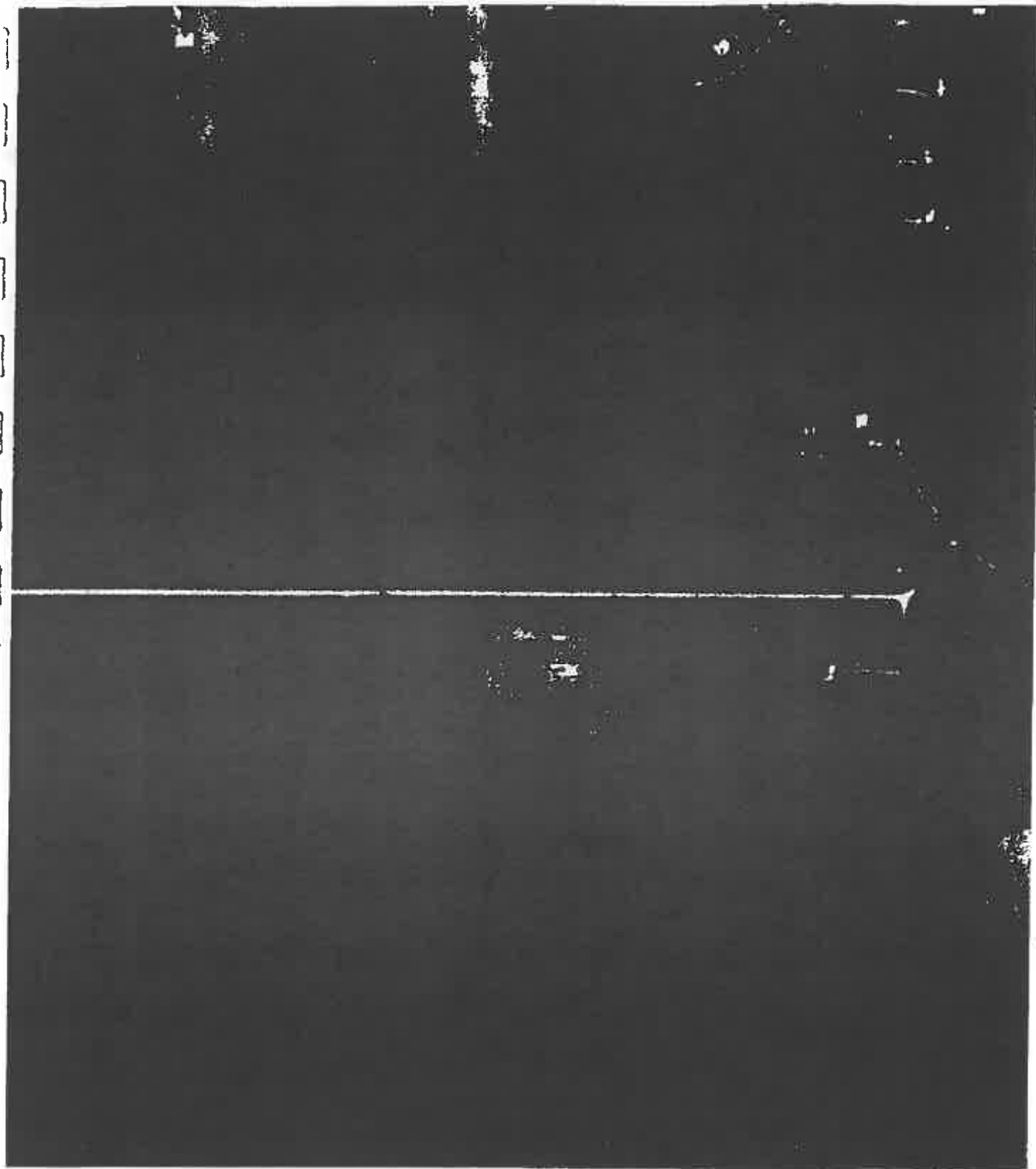
1965

HIG Project Number: MAE-1174

Client Project Number: A004-111-1.0001 .

Approximate Scale 1:6000 (1"=500')





**H**istorical  
**I**nformation  
**G**atherers, Inc.

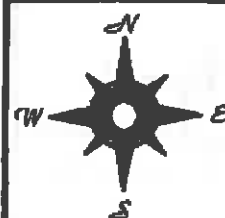
Heritage Village  
Princeton, Minnesota

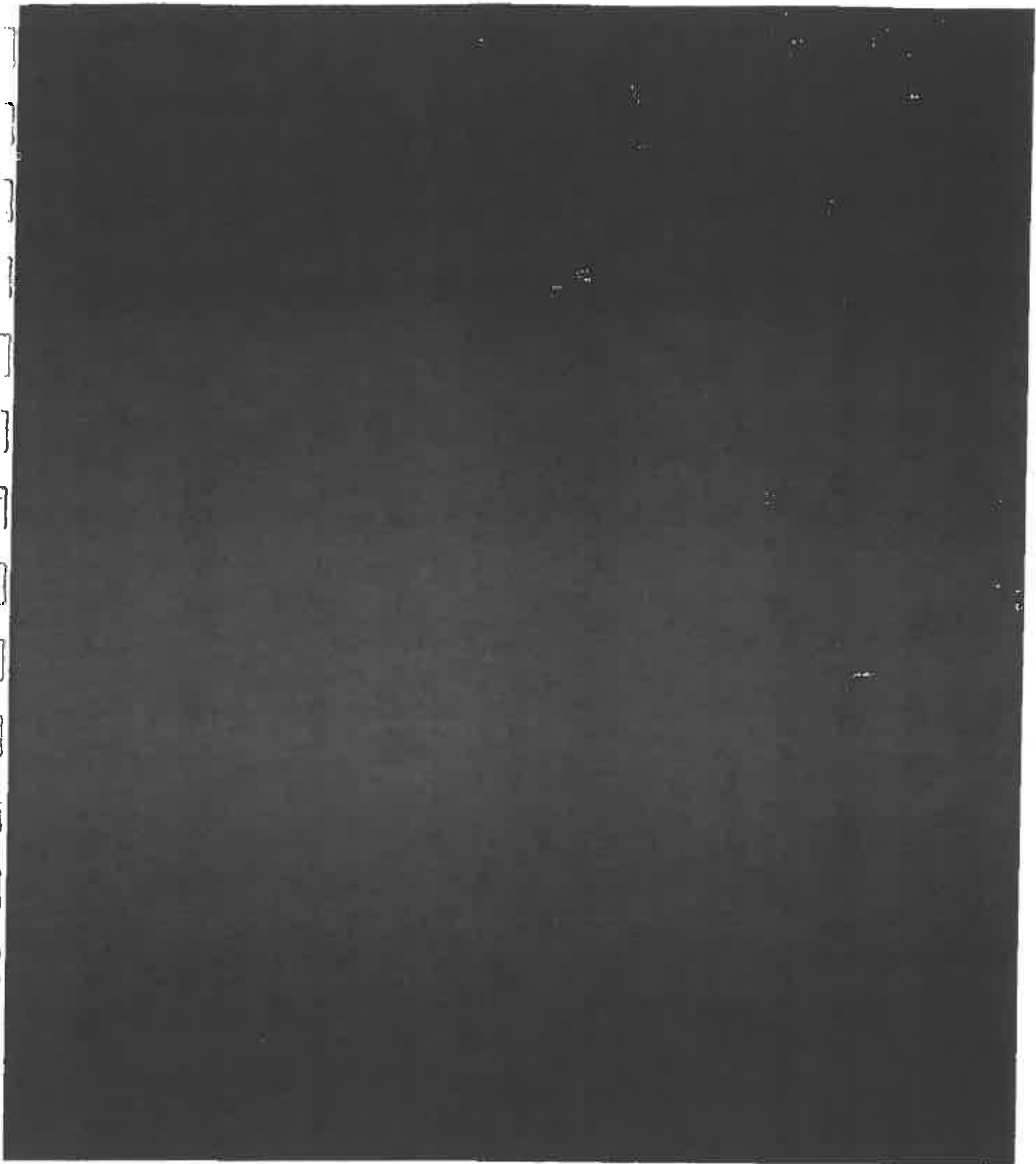
1983

HIG Project Number: MAE-1174

Client Project Number: A004-111-1.0001

Approximate Scale 1:6000 (1"=500')





**H**istorical  
**I**nformation  
**G**atherers, Inc.

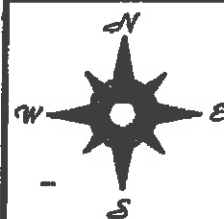
Heritage Village  
Princeton, Minnesota

2003

HIG Project Number: MAE-1174

Client Project Number: A004-111-1.0001

Approximate Scale 1:6000 (1"=500')



# WELL INFORMATION

Unique No. 638466		<b>MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD</b>				Update Date 2000/09/12																																															
County Name Mille Lacs		<i>Minnesota Statutes Chapter 1031</i>				Entry Date 2000/05/12																																															
Township Name	Township	Range	Dir	Section	Subsection	Well Depth	Depth Completed	Date Well Completed																																													
	36	26	W	31	BBB	105 ft.	100 ft.	2000/04/06																																													
Well Name MILLER, ERIC						Drilling Method Non-specified Rotary																																															
Contact's Name MILLER, ERIC 1946 107TH AV PRINCETON MN 55371-						Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From ft. to ft.																																														
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr><td>SAND, FINE</td><td>BROW</td><td></td><td>0</td><td>10</td></tr> <tr><td>SAND</td><td>BROW</td><td></td><td>10</td><td>20</td></tr> <tr><td>CLAY &amp; ROCKS</td><td>BROW</td><td></td><td>20</td><td>74</td></tr> <tr><td>SAND, FINE</td><td>BROW</td><td></td><td>74</td><td>76</td></tr> <tr><td>CLAY</td><td>BROW</td><td></td><td>76</td><td>78</td></tr> <tr><td>SAND, FINE</td><td>BROW</td><td></td><td>78</td><td>80</td></tr> <tr><td>SAND</td><td>BROW</td><td></td><td>80</td><td>100</td></tr> <tr><td>CLAY</td><td>BROW</td><td></td><td>100</td><td>105</td></tr> </tbody> </table>						GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	SAND, FINE	BROW		0	10	SAND	BROW		10	20	CLAY & ROCKS	BROW		20	74	SAND, FINE	BROW		74	76	CLAY	BROW		76	78	SAND, FINE	BROW		78	80	SAND	BROW		80	100	CLAY	BROW		100	105	Use Irrigation		
						GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																																											
						SAND, FINE	BROW		0	10																																											
						SAND	BROW		10	20																																											
						CLAY & ROCKS	BROW		20	74																																											
						SAND, FINE	BROW		74	76																																											
						CLAY	BROW		76	78																																											
						SAND, FINE	BROW		78	80																																											
						SAND	BROW		80	100																																											
						CLAY	BROW		100	105																																											
Casing Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> N					Hole Diameter In. to 105 ft																																																
Casing Diameter Weight(lbs/ft) 8 in. to 65 ft																																																					
Screen Y					Open Hole From ft. to ft.																																																
Make JOHNSON					Type L																																																
Diameter Slot Length Set					Fitting																																																
8 60 15 85 ft. to 100 ft																																																					
Static Water Level 7 ft. from Land surface					Date 000/04/06																																																
PUMPING LEVEL (below land surface) 79 ft. after 5.5 hrs. pumping 300 g.p.m.																																																					
Well Head Completion Pileless adapter mfr Model Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																																																					
Grouting Information Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																																																					
Material From To (ft.) Amount(yds/bags)																																																					
B 0 30 7 S																																																					
C 30 75																																																					
Nearest Known Source of Contamination ft. direction type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																																																					
Pump <input checked="" type="checkbox"/> Not Installed Date Installed N																																																					
Mfr name																																																					
Model HP Volts																																																					
Drop Pipe Length ft. Capacity g.p.m.																																																					
Type																																																					
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																																					
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																																					
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 71536																																																					
License Business Name Traut M.I. Well Co.																																																					
Name of Driller ROBBIE																																																					

REMARKS, ELEVATION, SOURCE OF DATA, etc.  
 WELL LOCATION INFO: N 45c 34.331 / W 093c 37.456  
  
 USGS Quad: Elevation  
 Aquifer: Alt Id:

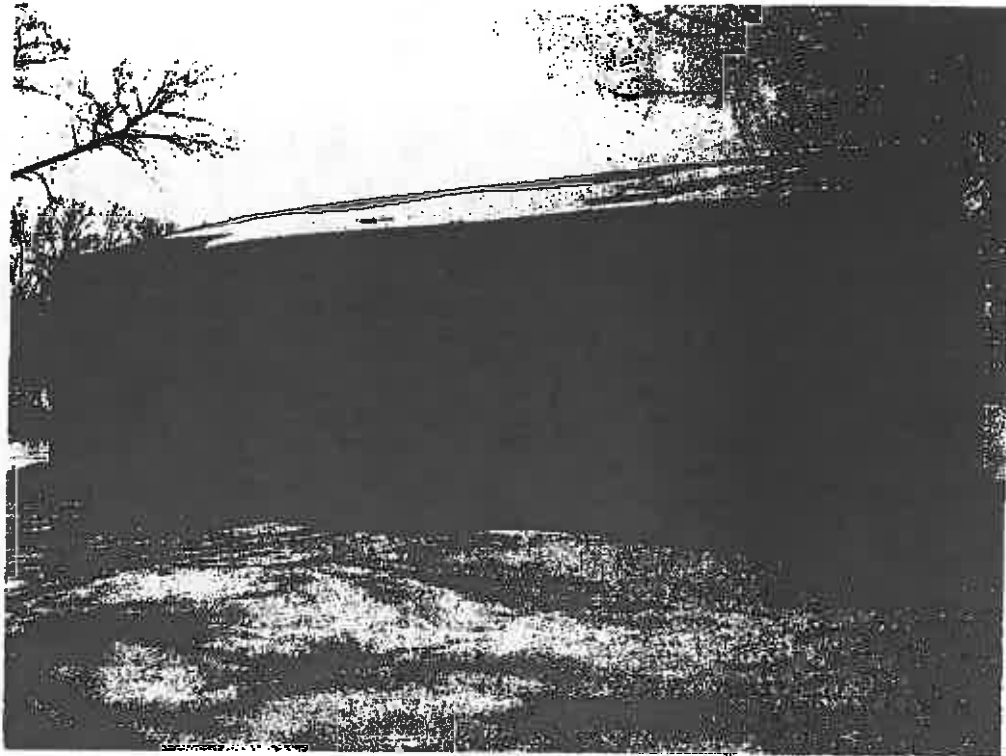
Report Copy

**APPENDIX H**  
**Subject Property Photographs**

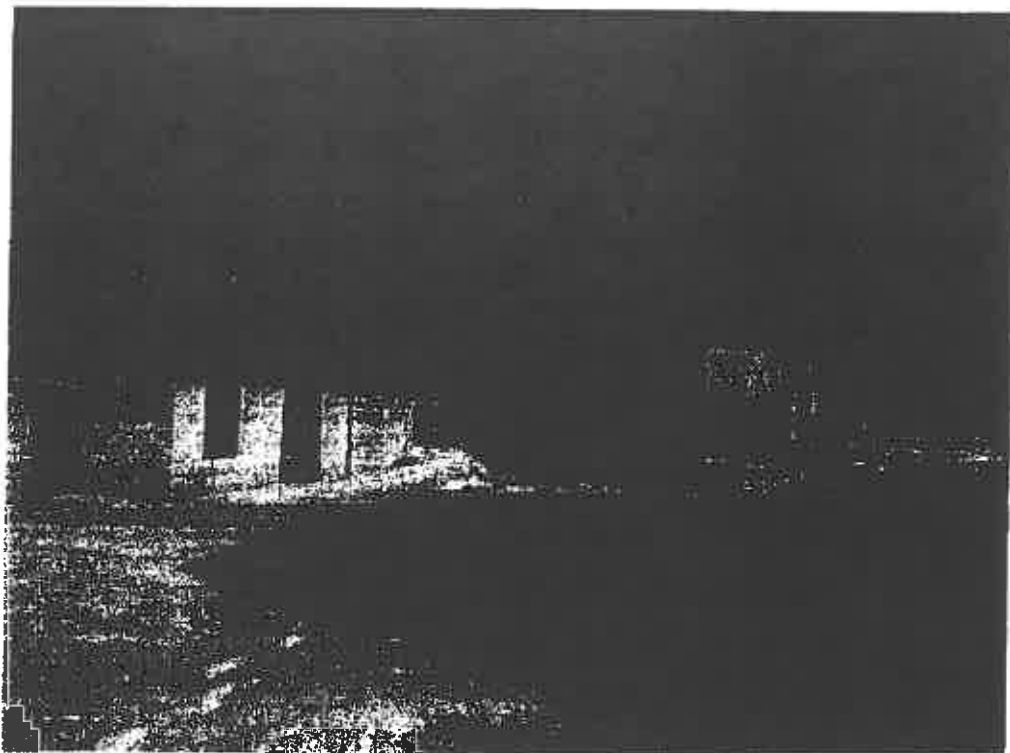


**Heritage Village**  
Southwest Corner of Highway 95 and 100<sup>th</sup> Avenue, Princeton, Minnesota

Delta Project No. A004-111



**Photograph 3**  
Building #3 – Outside storage shed



**Photograph 4**  
Building #4 – Barn (note two empty metal drums next to silo)

**Heritage Village**  
Southwest Corner of Highway 95 and 100<sup>th</sup> Avenue, Princeton, Minnesota

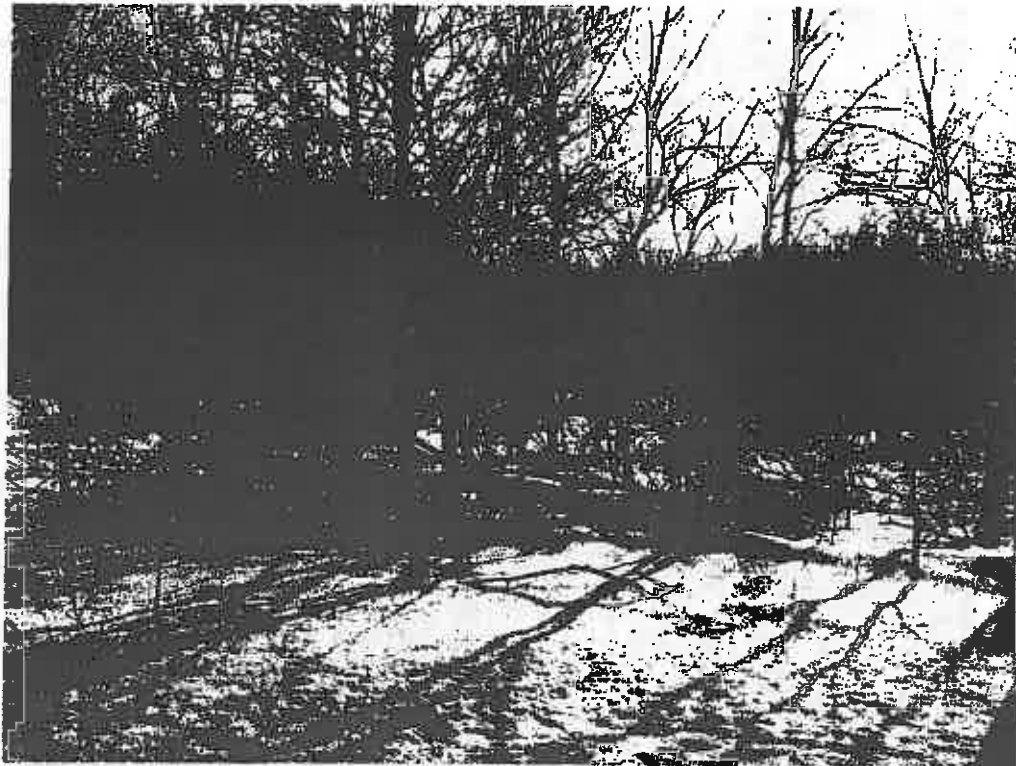
Delta Project No. A004-111



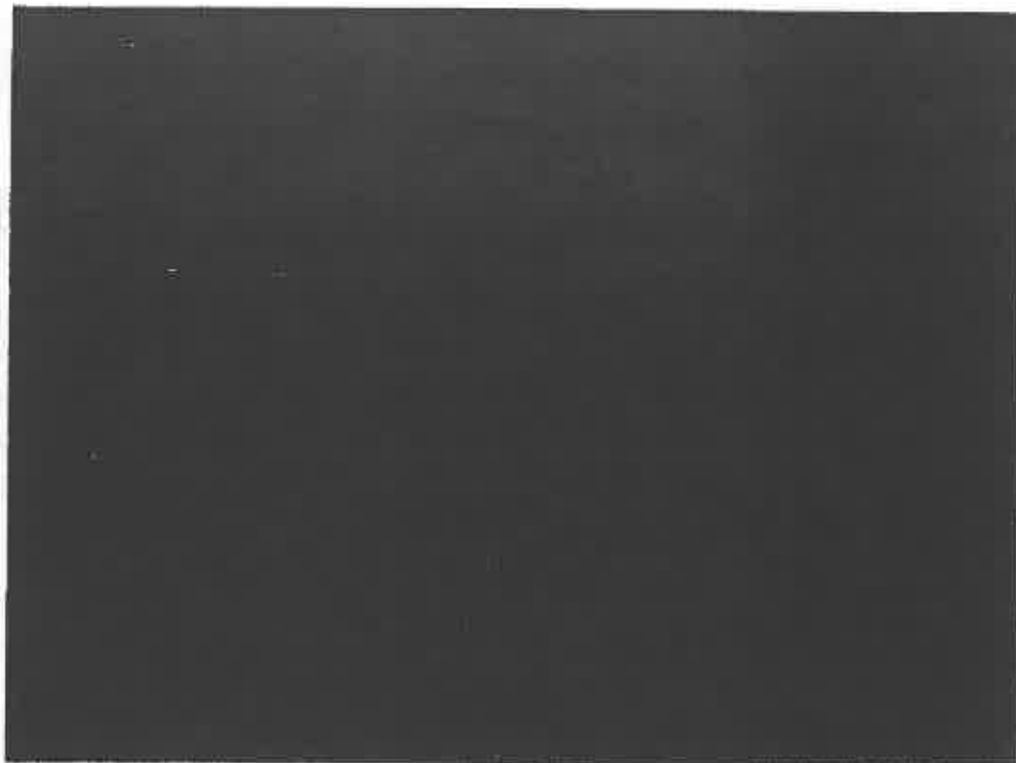
**Photograph 6**  
Inside of Building #2

**Heritage Village**  
Southwest Corner of Highway 95 and 100<sup>th</sup> Avenue, Princeton, Minnesota

Delta Project No. A004-111



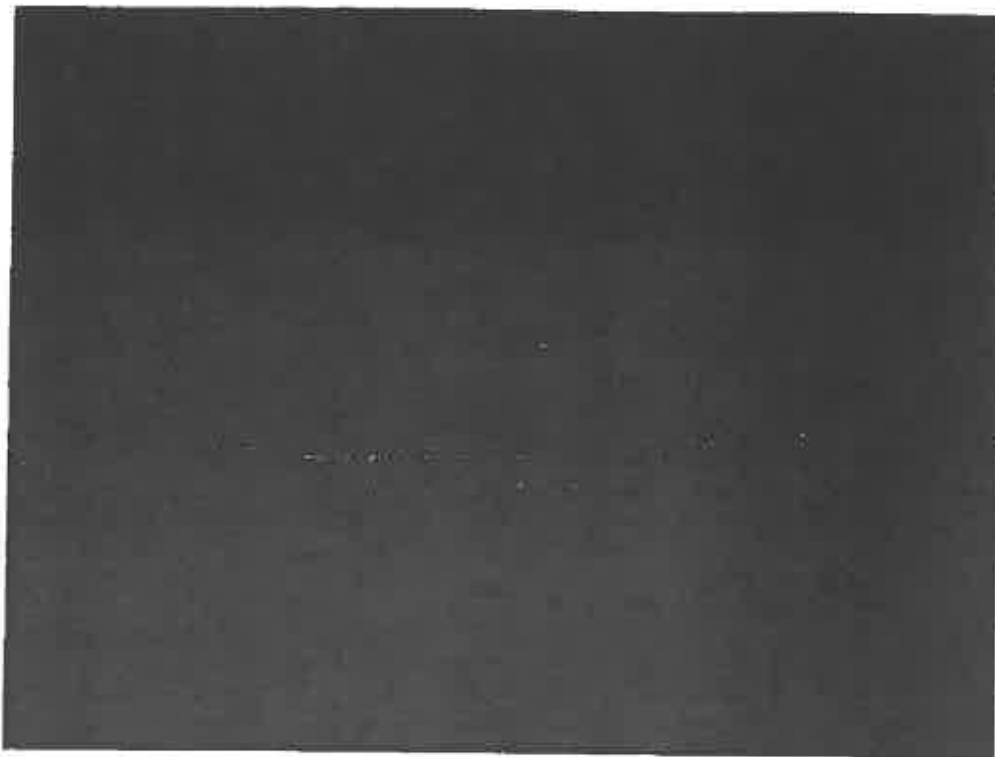
**Photograph 9**  
Wooded portion of property



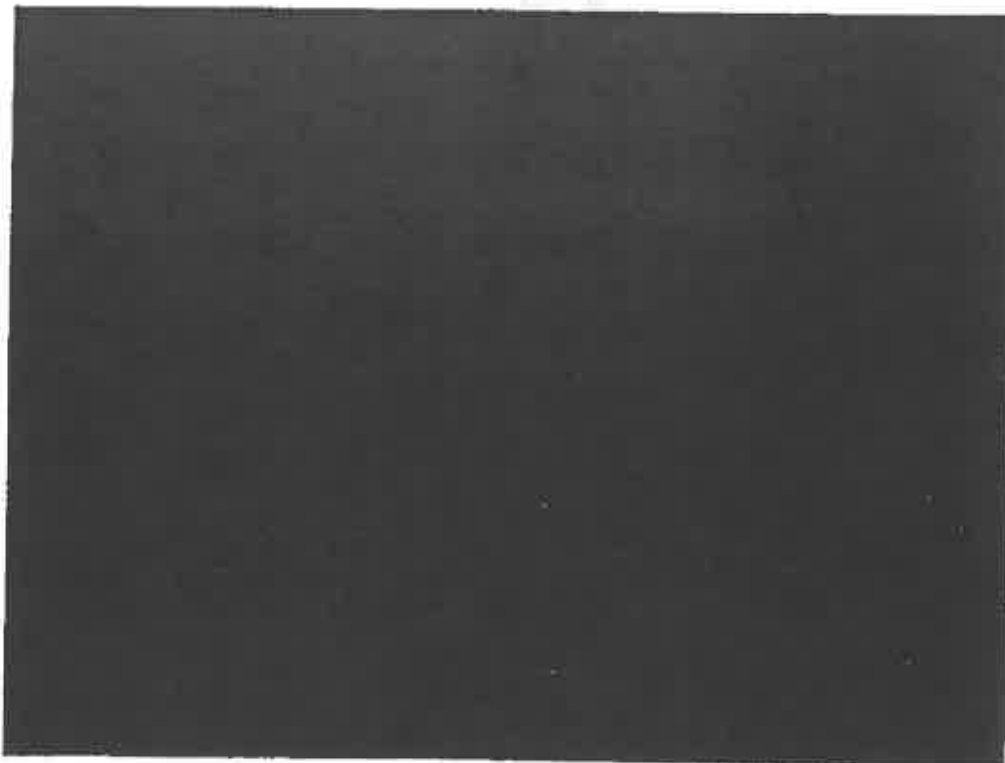
**Photograph 10**  
Field west of house on subject property (i.e., facing west from 1687 100<sup>th</sup> Avenue)

**Heritage Village**  
Southwest Corner of Highway 95 and 100<sup>th</sup> Avenue, Princeton, Minnesota

Delta Project No. A004-111



**Photograph 13**  
Subject property, facing north from 17<sup>th</sup> Street



**Photograph 14**  
Wetland area, just north of 17<sup>th</sup> Street

**APPENDIX I**  
**Project Team Profiles**



## Experience Summary

Keith E. Knoke is a Project Manager at Delta Environmental Consultants, Inc. He has more than nine years of experience in environmental consulting.

His technical expertise is in performing Phase I and II Environmental Assessments and remedial investigations, and in the landfill/ environmental practice area, where his responsibilities have included assessing ground water geochemistry, evaluating site hydrogeologic conditions, performing field geology and hydrogeology tasks, performing statistical evaluations of data, and developing ground water flow and contaminant transport models.

## Education and Professional Development

- M.S. Geology – Michigan State University, East Lansing, Michigan
- B.A. Geology – University of St. Thomas, St. Paul, Minnesota
- B.A. History – University of St. Thomas, St. Paul, Minnesota

EICE Short Course, "Avoiding Common Mistakes When Estimating First-Order Biodegradation Rates" by Grant Carey, 2001.

NGWA Short Course, "Transport and Fate Principles and Parameter Estimation Use in Modeling for Risk-Based Evaluation and Screening of Soil Contamination" by Michael Barden, 1999.

## Professional Affiliations and Registrations

- Registered Professional Geologist, Illinois #196-000386
- Registered Professional Geologist, Minnesota #30277
- Registered Professional Geologist, Wisconsin #1141-013
- 40-Hour OSHA 1910.120 Hazardous Waste Training and Annual 8-hour Refreshers
- Troxler Density and Moisture Gauge Certified
- Minnesota Groundwater Association
- National Groundwater Association

## Representative Project Experience

Performed compliance audits at a number of agricultural chemical storage and transportation facilities. The project included the preparation of applicable regulations and rules list, site visit, and report preparation.

Served as a project manager on a combined Phase I/Phase II Environmental Assessment of a horseshoe foundry facility in Minnesota. Primary duties included budget management, oversight of field activities, and report preparation. Due to contamination found on site, the site entered the Minnesota VIC Program. Site closure was obtained in a timely fashion and assured a successful property transfer.

Served as a project manager on a combined Phase I/Phase II Environmental Assessment of a proposed commercial development site in Minnesota. Worked closely with staff from the Minnesota Voluntary Petroleum Investigation and Cleanup Program (VPIC) to assess ground water contamination found on site. Conducted hydrogeologic investigation and determined ground water contamination was due to an off-site source.

Served as a project manager on a combined Phase I/Phase II Environmental Assessment of a proposed multi-unit residential development in Hinsdale, Illinois. Primary duties included preparation of a risk-based site evaluation and corrective action design. Worked closely with the developer and Illinois Environmental Protection Agency staff, which ultimately led to a successful development of the property.

Served as project manager on an environmental due diligence project that involved the acquisition of 25 bulk storage facilities in the US and Canada. Delta conducted Phase II Environmental site assessments, provided corrective action costs, assisted in reporting and compliance auditing tasks, that helped result in a successful merger and acquisition.

Served as project manager on an environmental due diligence project that involved the acquisition of seven offset and lithographic printing facilities located in the US and Puerto Rico. Delta conducted Phase I and Phase II environmental site assessments and compliance auditing that helped result in a successful merger and acquisition.



Served on several litigation support teams for the defense of cost recovery claims regarding the release of manufactured gas plant wastes to the soil and ground water.

Served as project hydrogeologist for four MPCA orphan sites. The projects included review, organizing data, subcontractor scheduling, and report preparation.

Served as project hydrogeologist for Minnesota Department of Agriculture (MDA) site in Castle Rock, Minnesota, and successfully completed a soil remediation. Tasks included field supervision, sample collection, and report preparation.

Assisted in the performance of a large-scale subsurface exploration and pump test project the Fermi National Accelerator Laboratory in Illinois.

Assisted in the performance of a large-scale geophysical survey of a naval air station in Illinois.

Performed ground water pump tests in Illinois and Georgia.

Performed a large hydrogeologic study in Illinois for the Illinois Department of Transportation. Project included approximately 30 pneumatic slug tests, four pump tests, data evaluation, and report preparation.

Performed numerous annual ground water and quarterly ground water reports for a number of landfills in the states of Minnesota, Illinois, and Virginia. Projects included evaluation of hydrogeologic and ground water data, regulatory compliance review, and report preparation.

Developed and implemented an assessment monitoring plan for a landfill in Virginia. This project included deep monitoring well installation, design of dedicated ground water monitoring system, and evaluation of ground water chemistry data.

Performed duties related to the development of a Significant Modification Permit for a landfill in Southern Illinois. These duties included supervision of drilling operations, ground water monitoring and leachate well installation, well development, hydraulic conductivity tests, and sample collection. Also supervised the installation of a Sealed double Ring Infiltration (SDRI), as well as the trained personnel in the use of the SDRI.

Performed and managed a large-scale ground water monitoring network installation and well abandonment program in Bristol, Virginia.

Developed ground water monitoring plans for landfills located in Virginia and Illinois.

Performed and analyzed a one-month long gas generation pump test in New Jersey.

Provide on-going pro bono consulting for the Civil War Preservation Trust. Projects included the performance of Phase I Environmental Assessments and report review.

## **Presentations and Publications**

"Temporal trends in nitrogen isotope values of nitrate leaching from an agricultural soil." Chemical Geology 146 (1998) 219-227.